

Brazil: Basic Report Information

Title of UNDP supported GEF financed project: Production of Sustainable, Renewable Biomass-based Charcoal for the Iron and Steel Industry in Brazil

UNDP PIMS#: 4675

GEF project ID#: 4718

MTR time frame and date of MTR report: June - September, 2019.

Country: Federative Republic of Brazil

GEF Operational Focal Area/Strategic Program: Climate Change

Executing Agency: United Nations Development Programme (UNDP)

Other Executing Partner (s): Ministry of Environment (MMA)

MTR team members: Mission Leader (Random DuBois, Consultant); Rosenely Diegues Peixoto, CO Focal Point (UNDP); Saenandoah Tiradentes Dutra, Acting Project Manager (UNDP), Monica de Oliveira, Technical Advisor (UNDP), Claudia Camara, Technical Analyst, UNDP, Michelle de Rezende Souza, Project Assistant, (UNDP), Matheus Valerio Fontenelle Mesquita, Project Clerk, (UNDP).

Acknowledgements: The Mission acknowledges with thanks the support of MMA and UNDP for facilitating the provision of information and scheduling meetings and field visits. The initial findings of the Mission were presented at the Wrap-up Meeting of members of the CAP and UNDP Project Team on 26 July 2019.

Table of Contents

Acronyms and Abbreviations	iv
I. Introduction	1
II. Project Description and Background Context.....	3
III. Findings.....	9
A. Project Strategy	9
B. Progress towards Results	10
C. Project Implementation and Adaptive Management	16
D. Sustainability.....	17
IV. Conclusions and Recommendations	20
A. Conclusions.....	20
B. Recommendations	21
List of Annexes	24
Annex A. UNDP-GEF Midterm Review Terms of Reference (TORs)	25
Annex B. Midterm Review Evaluative Matrix Template	40
Annex C. Example Questionnaire or Interview Guide used for Data Collection	42
Annex D: MTR Ratings.....	44
Annex E. Mission Itinerary	45
Annex F. List of Persons Interviewed	46
Annex G. List of Selected Documents Reviewed/Consulted	48
Annex H. Co-financing	50
Annex I: UNEG Code of Conduct for Evaluators/Midterm Review Consultants	51
Annex J: MTR Report Clearance Form	52
Annex K: Audit Trail Template	53
Annex L: Relevant midterm tracking tools.....	58
Annex M: Progress Towards Results Matrix (Outcomes against End-of-project Targets)	85
Annex N: Project Time Line.....	90
Annex O: Supplementary Data Tables.....	94
Annex P. Comparative Photos from MTR Site-visits.....	106

List of Tables

Table 1. Components and Outputs of Production of Sustainable, Renewable biomass-based Charcoal for the Iron and Steel Industry in Brazil
Table 2. Key Charcoal Project Formulation and Implementation Dates
Table 3. Progress Towards Results Matrix (achievement of project objective against End-of-project Targets)
Table 4. Progress Towards Results Matrix (achievement of project outcomes against End-of-project Targets)

Table 5. Financial Disbursement and Delivery at time of MTR in US\$ (as of 30 June 2019)

Table 6. Cumulative Project Disbursement by Year Compared to PRODOC in US\$ (as of June 2019)

Table 7a. Comparative Assessment of Sources and Amounts of Co-Financing at time of MTR (in constant US\$ 2012)

Table 7b. Comparative Assessment of Sources and Amounts of Co-Financing at time of MTR (in R\$)

Table 8. Additional Sources and Amounts of Co-Financing Secured and Projected at time of MTR (in US\$)

List of Figures

Figure 1. Project Institutional Arrangements

Figure 2. Cumulative Disbursement over the Period 1°/2015 – 1°/2019 (US\$)

List of Maps

Map 1. Steel Producers in Brazil

Acronyms and Abbreviations

ABC	Brazilian Cooperation Agency
ABRAFE	Brazilian Association of Ferroalloys and Silicon Metal Producers
AMIF	Minas Gerais Forest Industry Association
AMS	Silviculture Association of Minas Gerais (also known as Siviminas; currently AMIF)
AWP	Annual Work Plan
BDMG	Minas Gerais Development Bank
BdoB	Bank of Brazil
BNDES	National Bank for Social and Economic Development
CAP	Project Advisory Committee
CAPSidSus	Sustainable Steel Project Advisory Committee
CC	Climate Change
CCM	Climate Change Mitigation
CETEC	Technological Centre Foundation of Minas Gerais
CEO	Chief Executive Officer (GEFSEC) Project Management Committee
CH ₄	Methane
CIM	Inter-ministerial Committee on Climate Change
CO	Country Office (UNDP)
COP	Conference of Parties
CO ₂	Carbon Dioxide
CO ₂ eq	Carbon Dioxide Equivalents
CPD	Country Programme Document
CSO	Civil Society Organizations
DIM	Direct Implementation Modality
DPC	Drying-Pyrolysis-Cooling
EA	Executing Agency
EMATER	Technical Assistance and Rural Extension company of MG State
EoI	Expression of Interest
EOP	End of Project
FAEMG	Agriculture Federation of Minas Gerais State
FAPEMIG	Foundation for Research Support of Minas Gerais State
FD	Federal District
FIEMG	Federation of Industries of Minas Gerais State
FINATEC	Foundation for Scientific and Technological Enterprise
FundoClima	Brazilian Climate Change Fund
GAT	Technical Support Group
GEF	Global Environment Facility
GEx	Executive Board (CIM)
GHG	Greenhouse Gas Emissions
GMG	Government of Minas Gerais
GOB	Government of Brazil
GY	Gravimetric Yield
IA	Implementing Agency
IBGE	Brazilian Institute for Geography and Statistics Foundation
INDC	Intended Nationally Determined Contributions
I&S	Iron and Steel
JOF	Joint Implementation Facility
LOA	Letters of Agreement
LOP	Life of Project
M&E	Monitoring and Evaluation
MAPA	Ministry of Agriculture, Livestock and Food Supply
MCTIC	Ministry of Science, Technology, Innovation and Communications
MDIC	Ministry of Development, Industry and Commerce (currently ME)

ME	Ministry of Economy (formerly Ministry of Development, Industry and Commerce)
METT	Monitoring and Evaluation Tracking Tool
MG	Minas Gerais State
MLA	Mainline Agencies
MMA	Ministry of Environment
MMT	Million Metric Tons
MOU	Memorandum of Understanding
MRV	Measurement, Reporting and Verification (of GHG emissions)
MTR	Mid-term Review
NAMA	Nationally Appropriate Mitigation Action
NDC	Nationally Determined Contribution
NIM	National Implementation Modality
NGO	Non-Governmental Organization
NMHC	Non-Methane Hydrocarbons
PAC	Project Advisory Committee
PIF	Project Identification Form
PIR	Project Implementation Reports
PMU	Project Management Unit
PPG	Project Preparation Grant
PRODOC	Project Document
PSC	Project Steering Committee
RCU	Regional Coordinating Unit (UNDP)
RfP	Request for Proposal
RTA	Regional Technical Advisor (UNDP)
SCTC	Sustainable Charcoal Technical Commission
SDG	Sustainable Development Goals
SEBRAE	Brazilian Micro and Small Business Support Service
SENAR	National Rural Learning Service
Sindifer	Union Of Pig-iron Producers of Minas Gerais
Silviminas	Silviculture Association of Minas Gerais (also known as AMS; currently AMIF)
SMART	Specific, Measurable, Accepted, Relevant, Time-bound (indicators)
SPR	Supervision
TE	Terminal Evaluation
TOR	Terms of Reference
TPC	Tri-partite Committee
TT	Tracking Tool
UD	Demonstration Unit
UFV	Federal University of Viçosa
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
V&A	Vulnerability and Assessment
WWF	World Wildlife Fund

Executive Summary

Project Information Table

Project Title	Production of Sustainable, Renewable Biomass-based Charcoal for the Iron and Steel Industry in Brazil
GEF Project ID	4718
UNDP PIMS#	4675
Country	Federative Republic of Brazil
Implementing Agencies	United Nations Development Programme (UNDP)
Executing Agencies	Ministry of Environment (MMA)
PRODOC Signature Date	June 2015
Expected PRODOC MTR Date	June 2017
PRODOC TE	March 2020
Expected PRODOC Closing Date	June 2020
Budget	US\$ 7,150,000

Project Description

The objective of the 5 year Project is to reduce the greenhouse gas emissions from the iron and steel sector in the Brazilian State of Minas Gerais by: (i) developing and demonstrating enhanced, clean conversion technologies for renewable, biomass-based charcoal production; and (ii) implementing an effective, supportive policy framework. The scope of the Project consists of: (i) bringing together government actors, industries, sector stakeholders and research institutes; (ii) constructing a clear path towards market transformation by policy development in Minas Gerais; (iii) providing assistance for technological development; and (iv) implementing a first batch of commercial, advanced charcoal production facilities by providing specific financial incentives for the use of renewable charcoal. The budget of the Project is US\$ 43,950,000, of which US\$ 7,150,000 is provided as a grant under GEF CCM-2 and CCM-3, and US\$ 36,800,000 is provided as co-financing by the national Government, private sector and universities, and by UNDP CO in Brazil.

Project Progress Summary

Progress towards Project Objective. At the time of the MTR significant progress has been made toward achieving the project objective. This statement is supported by the: (i) implementation of proposals supported under the tender mechanism (7 proposals from 5 companies under execution); (ii) two kiln-furnace system demonstration units (UDs) installed and in use by producers within commercial sites in *Zona da Mata* region (small producer) and in Northwest of Minas Gerais (medium sized producer), respectively; (iii) initial results of increase of gravimetric yields for both small and large charcoal producers (ranging between 32 and 36 % dependent on specific technology and scale of producer (still to be confirmed by audit); and (iv) projected GHG emission reductions to be achieved by EOP. Progress towards achieving the policy target is less clear. The target of a “strategy” contributing to a policy regulatory framework in support of renewable charcoal use in MG (confirmed by the target in the METT) is relatively straight-forward. Moreover, there are elements that will contribute to the strategic framework (e.g., MRV, national policy on forest plantations, financial incentive studies supported under the Project etc.). What is less clear is what constitutes the “framework” itself, (i.e., is it a law, regulation, policy document or other) and will it be adopted by MG by EOP? It is highly unlikely that the Project will meet its target of leveraged capital investment of US\$ 40 million in light of the loss of *FundoClima* and BNDES funding. However, this loss in co-financing was partially offset by participating company investment in financial and in-kind contributions to build/improve their commercial production facilities.

Progress Towards Outcomes. As one would expect progress towards achieving the Project’s three outcomes tracks progress towards achieving the project objective described above. Specifically, for Outcome 1, with the exception of the policy indicator there has been substantial progress demonstrated through: (i) establishment of an operational MRV system supported by training that will migrate from the PMU to MMA before EOP; (ii) the development of methodologies to assess economic performance within the selected

charcoal production value chains;¹ and (iii) two financial incentive consultancies (the second of which will evaluate the use of financial incentives in delivering environmental outputs). For **Outcome 2**, progress at the time of the MTR has been marked by: (i) the on-going technology testing program; (ii) the establishment of two demonstrative units built and serving as bases for operational and structural studies carried out by University of Viçosa (UFV), which are scheduled to be concluded by September/2019; (iii) a new call for proposals from research and education institutions in Minas Gerais to build at least three new UD's and link them to research and rural extension activities; (iv) the analysis and improvement of existing business models leading to cleaner, more efficient, charcoal production carried out during the first six months of 2019 and the development of additional business plans for using kilns-furnace systems that will be used in the project's training program. A seminar focused on business models should take place by October/2019; and (v) a series of public outreach (e.g., the recently completed 5th Charcoal Forum) and training activities. For **Outcome 3**, at the time of the MTR the main result from the tender mechanism was 7 proposals selected from five companies of which three will complete their contracts and deliver the results of GHG reductions emission and/or increase of gravimetric yield in the second semester of 2019. It is projected that the tender mechanism-supported companies will result in 300,315 tons/year of charcoal production capacity with the adoption of more efficient technologies. Similarly, technologies have been demonstrating progress towards achieving gravimetric yields higher than 33%. Results will be audited at the end of the tender mechanism contracts. Resources derived from savings associated with exchange rate differentials (US\$:R\$) were reallocated within the same component to support a second and third call for proposals for support small producers and research institutes, respectively. Finally, there is an on-going consultancy to prepare a document on good practices that will be followed by a seminar in September/2019. An international event is planned to be organized during the last semester before EOP.

MTR Ratings & Achievement Summary Table (ratings defined in following table)

Measure	MTR Rating	Achievement Description
Project Strategy	N/A	
Progress Towards Results	Objective Achievement: To reduce the greenhouse gas emissions from the iron and steel sector in the Brazilian State of Minas Gerais, by (i) developing and demonstrating enhanced, clean conversion technologies for renewable, biomass-based charcoal production, and (ii) implementing an effective, supportive policy framework. Achievement Rating: 4	See outcome achievement descriptions below.
	Outcome 1: A policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions. Achievement Rating: 4	<ul style="list-style-type: none"> - a company was selected in June 2019 through an open competition to put forward the elaboration of the strategy and projected to be finalized by late 2019/early 2020; - MRV system design was concluded in December 2018. After testing, adjustments were made to make the platform more user friendly. The platform is available in B2ML servers (http://sidsus.b2ml.com.br/sidsus/); - within the project's MRV system methodologies based on CDM were developed to assess emissions reduction in three clusters: gravimetric yield (charcoal production), pyrolysis gases burning and fuel substitution; - financial incentives assessment consultancy concluded in August 2018 supported by a second, future consultancy to assess the results of financial incentive schemes, together with the business models consultancy and the two technical and economic feasibility studies on charcoal production with kilns-furnace system will provide the basis for the elaboration of the renewable charcoal strategy.
	Outcome 2: The technology and human capacity base for clean charcoal conversion in Brazil is strengthened by	<ul style="list-style-type: none"> - a charcoal technology test program is under way and is scheduled to be concluded in September 2019; - results of the consultancy on byproducts were presented in the public during the National Charcoal Forum (May 2019) supported by a charcoal by-product use training course. Training materials on byproducts utilization will be published and disseminated by October/2019;

¹ Socio-environmental performance of commercial facilities supported within the tender mechanism is currently under review by Imaflora. Social, economic and environmental performance of small charcoal producers will be assessed with "ISA" (Sustainability Indicators in Agrosystems) methodology, developed by the Minas Gerais Government

	technical assistance and targeted training. Achievement Rating: 5	<ul style="list-style-type: none"> - a consultancy was contracted to register, analyze and make improvement recommendations 5 existing business models in MG during the first half of 2019; - a call for EoI for support to small charcoal producers in adopting more efficient technologies, within the business models was completed and is now under analysis; - a seminar focused on business models is projected to take place by October 2019; - training materials prepared consisted of: (a) video (2019) and (b) construction and operation manuals for kilns-furnace system (printing scheduled for August/2019); - at time of MTR 19 training courses completed (367 people trained) including courses on: (a) construction and operation of kilns-furnace system, (b) carbon balance methodology applied to rural properties, (c) seminars / workshops on the use of byproducts, sustainable charcoal; production, business models, forestry etc (in National Forum on Charcoal)
	Outcome 3: Commercial charcoal production facilities are built under a competitive bidding mechanism to deliver objectively verifiable renewable biomass-based charcoal and GHG emission reductions. Achievement Rating: 5	<ul style="list-style-type: none"> - the Tender mechanism was completed; - resources were reallocated to support second call to support small producers in adopting more efficient technologies published in July, 2019; - currently there are 7 commercial charcoal production/use proposals under execution from five companies. Commitment of all tender mechanism-supported companies is projected to result in 300,315 tons/year of charcoal production capacity with more efficient technologies; - tender mechanism-supported technologies are achieving gravimetric yields higher than 33%. Results will be audited at the end of tender mechanism contracts; - tender mechanism-supported companies projected to in 425 kton of emissions reductions per year. By EOP target emissions reductions projected to exceed targets due to the two more calls for proposals to support more cleaner, more efficient, charcoal production commercial sites launched in July/2019; - consultancy on good practices currently on-going. Partial results will be presented at a seminar in September/2019; - an international event planned to be organized by EOP.
Project Implementation & Adaptive Management	Achievement Rating: 6	There exist few better examples of adaptive management than the PMU, supported by a sound project design and UNDP procedures and partners navigating the challenges faced in the project's first three years of implementation. There exists ample support that they created the sufficient "space" needed to meet and overcome many of these challenges as exemplified by creating a network of new institutional partners, resolving in part, the co-financing issue and increasing the profile of the small and medium-sized charcoal producers over time in the Project culminating in their participation in the tender mechanism.
Sustainability	Achievement Rating: 4	The PO was and is in conformity with SDGs and it also supports Brazil's continued commitments to UNFCCC and UNDP's CPD which bodes well for project sustainability. Moreover, the results of the technologies supported under the Project appear good and are likely to be adopted in the I&S and charcoal producer sectors. However, at the time of the MTR the policy and regulatory framework strategy, is unlikely to be adopted by government before EOP putting at risk outcome sustainability.

Table of MTR Rating Definitions

Ratings for Progress Towards Results: (one rating for each outcome and for the objective)		
6	Highly Satisfactory (HS)	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".
5	Satisfactory (S)	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
4	Moderately Satisfactory (MS)	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
3	Moderately Unsatisfactory (HU)	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
2	Unsatisfactory (U)	The objective/outcome is expected not to achieve most of its end-of-project targets.
1	Highly Unsatisfactory (HU)	The objective/outcome has failed to achieve its midterm targets and is not expected to achieve any of its end-of-project targets.

Ratings for Project Implementation & Adaptive Management: (one overall rating)		
6	Highly Satisfactory (HS)	Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as "good practice".
5	Satisfactory (S)	Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
4	Moderately Satisfactory (MS)	Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.

3	Moderately Unsatisfactory (MU)	Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
2	Unsatisfactory (U)	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
1	Highly Unsatisfactory (HU)	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Ratings for Sustainability: (one overall rating)		
4	Likely (L)	Negligible risks to sustainability, with key outcomes on track to be achieved by the project's closure and expected to continue into the foreseeable future
3	Moderately Likely (ML)	Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
2	Moderately Unlikely (MU)	Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
1	Unlikely (U)	Severe risks that project outcomes as well as key outputs will not be sustained

Summary of Conclusions

Status at Time of MTR. The Mission found that significant progress has been made towards the achievement of both the project objective and most of the associated outcomes. All technological innovations supported under the tender mechanism are in execution and are presently being monitored. Initial results indicate that they are (or will) achieve GY targets and GHG emission reduction targets. Independent audits of the results are scheduled before the end of the year. The 5 business models have been evaluated and results will be available in August 2019. Results from the testing of UFV's conversion technology and associated demonstrations units will be made available in September 2019. The policy and regulatory framework strategy, following public review and comment, is expected to be released by August of 2020. However, it is unlikely to be adopted by government before EOP. The outcome of US\$ 40 million of leveraged investment capital in support of more efficient charcoal production is highly unlikely to be achieved within the remaining time before project closure.

Co-financing. The effect of the financial crisis exacerbated by the significant decline in the price of oil and the congressional law calling for the diversification of oil royalty funds administered by BNDES and *FundoClima* in support climate change activities to other sectors, combined to contribute to a significant shortfall in counterpart resources in support of the Project at the time of the MTR. This was particularly dramatic when measured in constant US\$ but fall significantly due to the devaluation of the R\$ when measured in the national currency. The PMU responded by opening lines of communication with other potential alternative sources of funding in particular BdoB and regional development banks but found there were few financing windows available to credit in particular to projects associated with plantation forests due to the long lead times (7 years) before seeing a return on investment. It must be said that the Project has been successful in obtaining cash co-financing from the large I&S partners. It also appears to have been successful in leveraging a not inconsiderable amount of co-financing (mostly in-kind) from several of the partners (e.g., EMATER, SEBRAE, UFV etc.) but has not been able to document these contributions. Finally, there was no evidence of significant adverse effects on project progress associated with reduced co-financing, in particular from the large I&S partners that invested their own resources.

PRODOC. Project design was well-written and presents a coherent argument to justify the Project supported with a results framework that had been for the most part well thought-out and used SMART indicators. However, it was not clear on what the role was and what part the Project could play in support, of the small and medium-sized charcoal producer in MG. It appears that at time of project design, a process that lasted some 39 months, given data scarcity the project designers were not clear what the Project could do with respect to these potential stakeholders. It appears that the PMU and partners were able to remedy this uncertainty as by the time of the MTR sufficient interest and resources have been mobilized to support a new tender for this key target group of stakeholders.

PMU. The housing of the PMU staffed with GEF-funded consultants was an innovative approach to project implementation both for UNDP and GOB in support of the DIM modality of project implementation. The PMU proved to be particularly agile and was not burdened with time-consuming administrative procedures characteristic of working within large government bureaucracies and appeared to facilitate communications with UNDP as well as many of the partners. A more agile PMU staffed with competent, highly motivated individuals was required to navigate the Project successfully through an extremely turbulent period in Brazil.

Tender Mechanism. The payment for performance, tender mechanism appeared to be a highly innovative approach both for UNDP Brazil and GOB. Initially it appeared to have met with some skepticism among potential partners, in particular among the large I&S companies who were skeptical about potential loss of sensitive data with respect to their respective technological processes. One tool developed to meet this concern was the adoption of a two-step process beginning with a call for expressions (EoI) of interest. This served to filter out non-competitive or less than interested potential stakeholders from participation in the second round.

Partnerships. Perhaps the most successful result of the Project was the creation of a large and diverse network of stakeholders coming from Brasilia and MG's I&S and charcoal production sector. The development of this network and underlying partnerships in part reflected by the PMU's need to respond to increased government "fragility" and uncertainty (particularly in MG) associated with high staff-turnover resulting from the economic recession contributing to delays in paying salaries in the early years of the Project. In addition to the participation of the relevant federal ministries, mostly through their participation in the Project Advisory Committee (CAP), partners ranged from large I&S companies to smaller, family-run producers of primary material and charcoal, NGOs, producer associations and state-affiliated extension service providers to small producers. As a result, dialogue increased among stakeholders, information exchanged and the situation there appears to be reaching a "critical-mass" of stakeholders whose presence will increase the chances of the sustainability of project outcomes. The existence of this group may be critical to the eventual creation of a favorable policy environment to ensure the sustainability of project objective and outcomes.

Risks. During the MTR an analysis of risks identified in the PRODOC indicated that most are likely to remain through EOP at the same or in some cases a reduced level of probability. There appeared to be "cautious optimism" that the new government may be moving slowly towards engaging with on-going initiatives in support of climate change in particular where there is a well-defined role for the private sector; this would clearly benefit the Project. Two new risks to project sustainability were identified for the remaining period of the Project (absence of an enabling policy framework in MG and reduced replanting of forest plantation in the state).

Sustainability. The PO was and is in conformity with SDGs. It also supports Brazil's continued commitments to UNFCCC and UNDP's CPD. At the project level, preliminary results stemming from the pilot technology activities supported under the Project, indicate that they have been successful in demonstrating that increased efficiencies are able to be achieved concurrent with contributing to improved socio-environmental conditions for small/medium charcoal producers. Nevertheless, the I&S sector is highly complex and there exist many conditions beyond the control of the Project that will determine whether these results can be scaled-up and prove sustainable (e.g., general economic conditions, price of mineral coke, exchange rate risk, rival demand from cellulose market, etc.). These factors, together with the policy environment will likely be the main factors determining whether project objective and outcomes prove sustainable. As noted above, the absence of an enabling policy environment is a significant risk to sustainability.

Recommendation Summary Table

Issue	Recommendation
Policy Component	There is likely to be a framework strategy produced by a contracted firm towards end of project (August 2019). It is hoped that the strategy will integrate various policy elements (e.g., financial incentives, forest plantation policy in MG, MRV, etc.) and reflect "buy-in" from Federal and MG State, private and relevant NGO and CSO stakeholders in the I&S associated charcoal sectors. However, it is unlikely to be "adopted" by Federal and/or MG governments in the remaining time before project closure. Given the importance of the policy component to the success of the overall Project it is highly recommended that PMU consider applying additional resources, time (through a project extension) and the influence of CAP and other partners in an attempt to formalize the adoption of this critical policy output.
<u>Co-financing</u>	It is clear that as a project objective indicator the co-financing target will not be reached. However, significant progress has been made to close the gap based largely on the cash and in-kind contributions of the participating I&S companies and other partners. Nevertheless, there is considerable evidence that many of the contributions are not being documented and it is recommended that the PMU should

	attempt to calculate these contributions by EOP as an indication of level of interest among project stakeholders for TE.
METT	At the time of CEO Endorsement, METT ratings appear to have been set unrealistically high for EOP: (i) policy/regulatory strategy adopted and enforced (5); (ii) establishment of financial facilities (e.g., credit lines) would be operationalized/funded and have sufficient demand (5); and (iii) institutional/human capacity utilized and sustained (5). These EOP projections should be reviewed and revised accordingly and be brought more into line with the METT ratings at the time of the MTR.
<u>Revision/clarification of Results Framework Targets</u>	A review of the Project Results Framework at the time of the MTR with PMU indicate that the following need to be revised/clarified: (i) PO indicator on policy regulatory framework; (ii) PO target for investment capital leveraged; (iii) PO target of indirect GHG emission reductions; (iv) Output 1.1 on detailed strategy “adopted” by MG government; and (vi) Output 1.4, it is that that the Project will “put in place” financial incentives. Failure to do so will just postpone the problem until the TE.
<u>Confirmation of Project Closure Date</u>	The project start date as defined by the PRODOC signature date was June 2015. For this 5 year Project this has yet to be reconciled with the planned project’s closing date (December 2019) resulting in a 6 month short-fall. An adjustment for the 6 month differential resulting is a new closure date of June 2020 has been requested from UNDP and executed in May 2019. The change was authorized and executed in May 2019.
<u>Project Extension</u>	In light of the importance of the policy component to the success of the Project the Mission strongly recommends consideration be given to approving a one year extension (June 2020 – May 2021). This recommendation is based on the following factors: (i) MMA commitment to approve and promote the new policy framework; (ii) evidence of increased openness within national government to support CC-friendly policies; (iii) existing “buy-in” to support the new framework through a broad group of stakeholders including the existing (influential) partners that contributed to its formulation; and (iv) new opportunities that have developed late in the Project that if consolidated, could lead to increased project impact (e.g., growing participation in and support from independent charcoal producers).
<u>Use of Excess Project Funds</u>	Due to exchange US\$:R\$ rate favoring the Project there exists an estimated surplus of US\$ 1.3 million. There is no shortage of good ideas how to use these funds. However priority should be given to promoting the adoption (and implementation if possible) of elements associated with the policy framework strategy. Regardless of the final decision it should be linked organically to what came before under the Project and serve as a “bridge” supporting the “next steps.” The team may want to consider using some of these resources to identify additional finance in particular to carry-through on the policy outcome (e.g. through preparation of a PIF/PPG for a GEF Medium-sized Project).

I. Introduction

1. The stated objective of the Mid-term Review (MTR) is to assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document (PRODOC) and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results.
2. The Terms of Reference (TOR) state that the MTR is expected to provide evidence-based information that is credible, reliable and useful. The MTR Mission Leader is expected to review all relevant sources of information including documents prepared during the preparation phase (i.e. Project Identification Form [PIF], UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the PRODOC, project reports including Annual Project Reviews/Project Implementation Reports [PIR], project budget revisions, lessons learned reports, national strategic and legal documents and any other materials considered useful for this evidence-based review). The MTR is also to include a review of the baseline GEF focal area Monitoring and Evaluation Tracking Tool (METT) submitted to the GEF at the time of the CEO endorsement as well as the completion of the midterm METT before the MTR field mission begins.
3. The MTR team is also expected to follow a collaborative and participatory approach ensuring close engagement with the project team, government counterparts (the GEF Operational Focal Point), the UNDP Country Office (CO), UNDP-GEF Regional Technical Adviser (RTA) and other key stakeholders. Engagement of stakeholders is considered vital to a successful MTR. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to: the Ministry of Environment (MMA), Ministry of Science, Technology, Innovation and Communications (MCTIC), Ministry of Agriculture, Livestock and Food Supply (MAPA), Ministry of Economy (ME) and the Minas Gerais Government (MG); executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, Project Board, project stakeholders, academia, local government and CSOs, etc. When in Brazil, the MTR team is further expected to conduct a field mission to the state of Minas Gerais including the following project sites: Belo Horizonte (interview with local stakeholders, such as Sebrae, FAEMG, FIEMG, AMIF (Silviminas) and/or EMATER – Minas Gerais Government); Viçosa (interview with partner university - UFV); Lamim (demonstration unit- charcoal production); Jeceaba (enterprise supported by the project - fuel substitution); and Curvelo (enterprise supported by the project - charcoal production).
4. In the MTR's review and assessment of the Project specific tasks are to be addressed under the following four aspects:
 - Project Strategy. The main tasks under the assessment of project strategy is to focus on project design and quality at time of entry into implementation to include reviews of: (i) the problems to be addressed by the Project and the underlying assumptions, (ii) relevance of the project strategy and how it addresses country priorities and (iii) decision-making processes. Under this task a detailed assessment will be completed of the project's objectives, outcomes and components/activities to determine feasibility of design, funding levels and time frame to achieve stated objectives/outcomes. A key task is to evaluate the project's logframe including an assessment of indicators and targets (to include gender aspects) and suggest specific amendments/revisions to same if necessary;
 - Progress Towards Results. The main task under this category is to review the progress towards the stated project outcomes achieved at the time of the MTR and complete an assessment of the likelihood of meeting the stated end-of-project (EOP) targets using UNDP's Progress Towards Results Matrix for presentation purposes. The main elements under this task are to identify key constraints faced by the Project to achieve EOP outcomes and where necessary, propose mitigation measures as well as identify opportunities in which the Project could further expand on the achievement of stated benefits and compare and analyze the GEF Monitoring and Evaluation Tracking Tool (METT) at the baseline with the one completed before the MTR;
 - Project Implementation and Adaptive Management. Under this task, the Consultant is to review the project's management arrangements (overall effectiveness, quality of Executing Agency [EA] / Implementing Agency [IA] execution and level and quality of supervision support provided by

UNDP); timeliness and quality of project implementation; financing and co-financing (including issues associated with budget reallocation if necessary); flow of funds and existence and application of effective financial controls; design, application and effectiveness of a project-level M&E systems; stakeholder engagement; reporting; and communications; and

- Sustainability. An assessment of risks identified during project design and implementation is to be completed to confirm if correctly identified and where necessary addressed. In this assessment specific reviews of potential risks associated with financial, socio-economic, institutional (including legal frameworks, policies, and governance structures) and the environment to the sustainability of project objectives and outcomes should be completed.

5. The final report is to describe the approach to and rationale behind the MTR making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach to the review.

6. The approach to the MTR was phased sequentially. Prior to the arrival of the mission in Brasilia this consisted of the following: (i) an initial teleconference with UNDP Project staff; (ii) agreeing, securing and reviewing project documentation including an evaluation for completeness; (iii) preparing a list of data needs and tables to provide the Project Management Unit (PMU) in anticipation of the Mission's arrival in Brasilia to complement the field portion of the MTR; (iv) researching the internet for relevant non-project related documents (e.g., national government plans and strategies, updates on the MMA, MCTIC and MAPA, webpages, project documents and strategies, etc.); (v) preparation of interview guidance for use with project stakeholders; (vi) drafting and finalizing a list of meetings with UNDP of partners and other relevant individuals/institutions to meet during the visit to Brasilia and MG; and (vii) preparing and submitting a MTR inception report to UNDP prior to travel.

7. Following the Mission's arrival in Brasilia initial meetings were held with the UNDP project team. This was followed by a number of meetings over the course of the next two days in Brasilia before traveling to Minas Gerais for 7 days to meet project partners and conduct a number of site visits (see Annexes E and F for specifics). On the morning of the final day the Mission provided a Powerpoint presentation to the project team on the Mission's initial findings for purposes of review for accuracy of the factual characteristics of the Project and an exchange of views on the initial conclusions, providing the needed inputs for the completion of the evaluative sections of the MTR. Following the Mission's departure from Brasilia the drafting of the MTR was finalized at the consultant's home base.

8. The main constraint faced by the MTR was the absence of MTR targets in the project's Results Framework (this was not a requirement at the time of the PRODOC under GEF 5 requirements). This has been discussed in greater detail in the section on Main Findings, below. As a result, no achievement ratings and justification for rating was included in the Progress Towards Results Matrix (see Annex M).

9. The structure of the MTR is comprised of 4 sections consisting of a brief introduction, followed by a description of the Project and background context, the MTR's main findings, followed by a final section on conclusions and recommendations. The main findings of the report are divided into sections addressing the following issues: project strategy, progress towards results, project implementation and adaptive management and sustainability. The conclusions and recommendations section is divided into two sub-sections which highlight the strengths, weaknesses and results of the Project linked to the MTR's findings based on factual evidence (conclusions) and any proposed corrective actions and proposals (recommendations) designed to correct, reinforce and/or provide future directions to be considered by Project team to increase chances of achieving project objectives in a cost-efficient manner. The TORs specified that there should be no more than 15 recommendations. The main body of the report is followed by 12 annexes as called for in the MTR Terms of Reference (TOR) and an additional, four optional annexes consisting of the UNDP-required progress towards results matrix (achievement of outcomes against EOP targets), the project time-line, a series of data tables filled out by the PMU that were too lengthy to include in the main body of the text and photos taken in the field over the course of the Mission, respectively.

II. Project Description and Background Context

10. Development Context. With an area of nearly 8.6 million km², Brazil is South America's largest country and the fifth largest in the world. The country is characterized by five main climatic regions equatorial (North), tropical (most of the territory), semi-arid (Northeast), tropical of altitude (Southeast), and subtropical (South) and six main biomes Amazon rainforest, Atlantic forest (*Mata Atlantica*), Savannah (*Cerrado*), semi-arid (*Caatinga*), freshwater wetlands (*Pantanal*) and grasslands (*Pampas*).

11. Socio-economic Context. The national population of some 209 million (2017) is mainly urban (86 %) but given Brazil's size the overall density of the country is only 25 per/km². Of the national population an estimated 26.5 % is classified as living at or below the national poverty line; this despite the strong period of economic growth and social progress between 2003 and 2014, where more than 29 million people left poverty and inequality declined significantly.² It must be understood that the vulnerability of Brazilian population to climate risk is a situation that depends not only on the expected changes in climate, but also the ability of families, to adapt to changing conditions which is closely related to their social vulnerability.

12. Brazil's economy is the second largest in the Americas and the 8th largest in the world characterized by a mixed economy that relies on import substitution to achieve economic growth. The main sectors are services (67% of GDP), manufacturing (28.5 %) and agriculture (5.5%).

13. At the time of the PRODOC Brazil was the world's second largest exporter of iron ore (production of 375 million metric tons [MMT], in 2012³) and ninth largest producer of crude steel in 2012 (34.7 MMT), corresponding to 3.2% of world production⁴). As of 2017 iron ore exports had increased to 585 MMT though steel exports have remained largely static at 34.3 MMT (see Tables 1a – 1c in Annex O for more detail). Approximately 70 % of the country's iron and steel (I&S) production is found in the State of Minas Gerais (MG)⁵ The I&S sector is unique because 34% of iron production is obtained by using charcoal instead of imported mineral coke as the reducing agent;⁶ a feature that is attributed to the absence of industrial quality mineral coke in Brazil and the State's abundant native forests which supported the iron and steel industry's needs up until the 1940s before coke was introduced by the large integrated steel mills. While coal coke continues to be used by these large mills, charcoal remains widely used in the production of both pig iron and steel production.

14. The steel industry is represented by 14 private companies controlled by 11 groups operating 29 plants distributed among 10 Brazilian States (see Map 1). In MG there are currently 9 steel plants. In addition, there are a number of smaller independent iron mills in the country of which the majority are in MG (41 mills). The main product of these latter mills is pig-iron (*ferro-gusa*) of which an estimated 3.1 million metric tons (MMT) was produced in 2018 of which some 50 % was exported the remaining being used in the domestic market.

15. The large steel and iron (I&S) companies have invested heavily in *Eucalyptus* plantations to secure charcoal production. However, even though these companies are vertically integrated and own their respective forest plantations, the charcoal production process itself is usually outsourced to local contractors, who in turn hire (or organize) the individual laborers.

² Based on headcount ratio. Source: *Instituto Brasileiro de Geografia Estatística (IBGE). Pesquisa Nacional por Amostra de Domicílios Contínua (PNAD-C). Summary of Social Indicators 2018.*

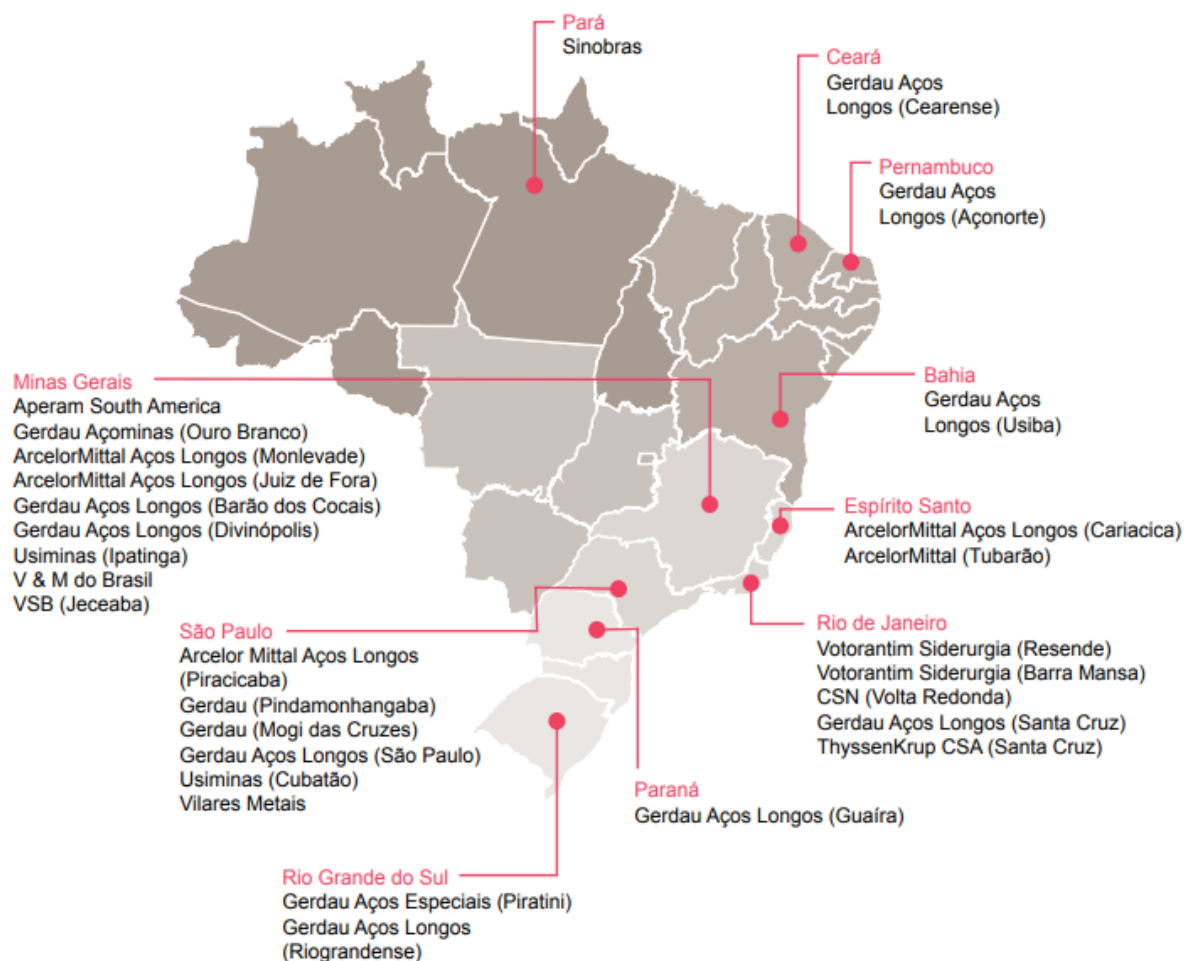
³ Source: http://minerals.usgs.gov/minerals/pubs/commodity/iron_ore/mcs-2013-feore.pdf

⁴ Source: <http://www.worldsteel.org/media-centre/press-releases/2012/12-2012-crude-steel.html>.

⁵ The other region is East Amazonia between the Carajás mineral district and the Itaquí harbor (Pará).

⁶ Iron production starts by transforming the mineral (ore) into pure iron by removing the oxygen from the ore (basically iron oxide) through a process termed reduction that can occur either through the addition of coke obtained from mineral coal or charcoal.

Parque produtor de aço no Brasil



Fonte: Instituto Aço Brasil

Map 1. Steel Producers in Brazil

16. In contrast to the large I&S industries the independent pig-iron producers purchase vegetative carbon (charcoal) locally. This in part is due to the high investment costs associated with establishing these plantations (estimated to be on average 7 times the cost of the mill itself). These charcoal producers are a large and diverse population ranging from individuals that produce charcoal as one of several production activities (e.g., together with milk, vegetables and other basic production activities) to urban-based professionals that invest in the activity to achieve a secondary income but contract out the actual production process to third parties. As a result of the large and diverse range of producer profiles, volatility in numbers dependent on market conditions and broad dispersal of producers across MG, data on this sub-sector are scarce; it is estimated that between 70 and 80% of the charcoal production of MG comes from small and medium sized producers

17. In Brazil there also exists a traditional, informal charcoal sub-sector based on wood supplies from unregistered sources, including deforestation of native forests (within the territory of the state of Minas Gerais specifically the “*Cerrado*” forests). Main “drivers” identified in the PRODOC for the continued presence of this sub-sector are: (i) when demand for charcoal exceeds current production of *Eucalyptus* plantations; (ii) demand for unregistered (illegal) sources to keep input costs low and protect profit margins; and (iii) evidence that forest resources for production of charcoal at distances at or above 1,000 km are not economical due to high transport costs.

18. Conventional charcoal kilns in Brazil are the “hot-tail” type which have continued to be used even after I&S companies started to turn to *Eucalyptus* plantations. Typically, small clusters of kilns are operated by one laborer who is paid according to the volume of charcoal produced (see photo in Annex O). The emphasis during the production process is on the charcoal output per kiln⁷. The gravimetric yield (which is a direct measure of the efficient use of the wood input⁸) is 25%, well below the 35% that is currently taken as a yardstick⁹. As a result, more wood is consumed than strictly necessary. Under non-optimal conditions the gravimetric yield drops and substantial methane emissions contributing to global warming are released during the conversion process. The conversion process is also very polluting for the direct environment and difficult to control; its performance depending on the skills of the operator¹⁰. Although the sector strives at improving the work conditions for laborers in compliance with national law, many rural workers do not have any formal contract or legal protection and are unaware of their rights.

19. At the time of the PRODOC the sector had started to develop more advanced charcoal production technologies. These included adoption of: (i) optimized logistics, permanent production sites and improved control of the carbonization process, enabling larger clusters of traditional kilns; (ii) large, rectangular steel kilns which allow greater productivity per worker; (iii) rectangular kilns with heat recovery; (iv) Drying-Pyrolysis-Cooling (DPC) technology; and (v) co-generation and by-products.

20. Institutional and Policy Factors. The legal framework governing the country’s policy on climate change is set out in Federal Law No. 12,187 of December 29, 2009. The main instruments for implementing this Law are: (i) the National Plan on Climate Change which defined actions and measures aimed at mitigation and adaptation to climate change (December 2008); (ii) Federal Law No.12,114 of December 9, 2009 that established the Brazilian Climate Change Fund (*FundoClima*) to financially support mitigation and adaptation actions using resources from the country’s oil royalties; (iii) two action plans to prevent and control deforestation in the Amazon and *Cerrado* biomes respectively; and (iv) three plans for mitigation and adaptation in agriculture, energy and charcoal, respectively.

21. At the time of PRODOC approval Brazil’s Ministry of the Environment (MMA) was the leading government entity responsible for the development of the country’s Nationally Appropriate Mitigation Actions (NAMAs), which addressed the charcoal sector. MMA also served as the Executive Secretariat of the Inter-ministerial Committee on Climate Change and its Executive Board (GEx/CIM) and was responsible for monitoring the implementation of the Charcoal Plan, including the design of the corresponding Measurement, Reporting and Verification (MRV) systems of GHG emissions.

22. The entity ultimately responsible for implementing the aforementioned Sustainable Charcoal Plan for the I&S sector however was the Ministry of Development, Industry and Commerce (MDIC). The Plan would focus on: (i) promoting the reduction of emissions, (ii) avoiding deforestation of native forests and (iii) increasing competitiveness of the Brazilian I&S industry in the context of a low-carbon economy.

23. The Brazilian National Fund on Climate Change (*Fundo Nacional sobre Mudança do Clima* or *Fundo Clima*, FC) was established in 2009 by law 12.114 “with the aim of ensuring resources to support projects or studies and finance initiatives that focus mitigation of climate change as well as adaption to climate change and its effects.” At the time of the PRODOC *FundoClima* would make available resources to the sector through the management of both reimbursable (loans) and non-reimbursable (grants) funds, administered by Brazil’s National Bank for Social and Economic Development (BNDES) and MMA, respectively.

24. A partial ban on the use of native wood for charcoal production limiting its use to only 5 % of total wood was put in place in MG in 2018 (forestry law No. 18.365/09).

⁷ That is the volume of charcoal produced in a kiln during a certain time period. The focus on volumetric yield is partly historical, as the outputs from forest logging are traditionally measured by volume.

⁸ Gravimetric yield = tons charcoal produced / tons wood inputs * 100%.

⁹ For financing of charcoal plants by BNDES. Under controlled conditions, a gravimetric yield of 40% can be attained.

¹⁰ The efficiency and quality of the charcoal production depend highly on the skills of the carbonization worker; relevant technical parameters are: process timing, temperature evolution, and wood humidity. Under sub-optimal conditions, methane is produced and emitted with the fume gases, together with other hydrocarbons.

25. **Problems and Barriers the Project Sought to Address.** In response to national climate change policies and the international market for CO² certificates at the time of the PRODOC Brazil's large I&S sector had been increasingly focused on developing *Eucalyptus* plantations for charcoal production in part for their use as a carbon sink to offset the sector's GHG emissions. However, it was thought that insufficient attention was being paid to the limitations of the current (traditional) charcoal production process, which may put at risk the national ambition to produce the required large amounts of renewable, biomass-based charcoal for the sector. At the time of the PRODOC this problem was felt to be especially relevant because advanced and clean conversion technologies were not commercially applied in Brazil.

26. Specifically, the limitations and adverse impacts of current charcoal conversion technology identified in the PRODOC were: (i) input resources (wood, land, labor) are used inefficiently; (ii) the conversion process is small-scale, difficult to control and labor-intensive; (iii) traditional kilns offer few opportunities for obtaining scale benefits and cannot produce the charcoal volumes demanded by Brazil's I&S sector in the future; (iv) substantial quantities of methane (CH⁴) and Non-Methane Hydrocarbons (NMHCs) are produced under off-design conditions and released into the atmosphere, contributing to global GHG emissions; and (v) by-products and emissions of the traditional process are highly polluting for the local environment and harmful for the workers.

27. Moreover, investment in advanced, more efficient charcoal conversion technologies was not thought to be profitable at the time under present existing market conditions. These conditions were characterized as: (i) low and fluctuating prices for pig iron on the international commodity markets; (ii) the continued presence of (low cost) charcoal from illegal sources, which reduces the market value of charcoal from renewable biomass sources (sustainable forest plantations); (iii) a reference price level for pig iron set by the international market based on mineral cokes; (iv) supply constraints for wood and charcoal to respond to fluctuations in pig iron markets; and (v) the traditional perception by the sector of charcoal as a cost, rather than a factor to create added value.

28. **Project Description, Strategy, Objectives and Outcomes.** The objective of the UNDP/GEF Project "Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil" is: to reduce the GHG emissions from the I&S sector in the Brazilian State of Minas Gerais by: (i) developing and demonstrating enhanced, clean conversion technologies for renewable, biomass-based charcoal production; and (ii) implementing an effective, supportive policy framework.

29. The Project was designed to target the previously identified barriers that currently impede the clean and efficient conversion of (renewable) biomass resources to charcoal for the I&S sector in Brazil. Specifically, the Project would promote the availability of sustainable, renewable biomass-based charcoal, produced efficiently and at a competitive cost level compared to the cost of imported mineral coke. The estimated budget of the Project was US\$ 43,950,000, of which US\$ 7,150,000 would be provided as a grant under GEF CCM-2 and CCM-3 and an additional US\$ 36,800,000 in co-financing would be provided by the national Government, private sector and universities, and by UNDP CO in Brazil.

30. The Project comprises three main components with related outcomes, outputs, activities and sub-activities (see Table 1, below).

Table 1. Components and Outputs of Production of Sustainable, Renewable biomass-based Charcoal for the Iron and Steel Industry in Brazil

Component (outcome)	Outputs
1. A policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions.	1.1. A detailed strategy is put into place by the Government (MMA & MDIC) to promote the use of renewable biomass-based charcoal by the I&S sector in MG
	1.2. A Monitoring and Certification Platform to register GHG emission reductions achieved by efficient charcoal production facilities implemented by the I&S sector
	1.3. The environmental impact and resource efficiency of clean, renewable biomass-based charcoal production chains are assessed using analytical tools
	1.4. Financial incentive schemes to promote the use of renewable biomass-based charcoal (e.g. tax exemptions, soft loans, performance based payments) are assessed on their merits

2. The technology and human capacity base for clean charcoal conversion in Brazil is strengthened by technical assistance and targeted training.	2.1. Baseline technology development for clean charcoal conversion is enhanced by supporting the design, testing and evaluation of key system components
	2.2. Support is given to optimize technologies to capture by-products from the charcoal conversion process, including tar products, hydrocarbons, and process heat
	2.3. Efficient business models are developed (accounting for variations in plant size, logistical set-up, use of by-products, ownership models) to accelerate the widespread introduction of clean charcoal conversion technology
	2.4. Training material on clean charcoal conversion is developed and used for: (i) technical training targeting I&S companies, universities and research institutes; (ii) policy and decision makers; and (iii) project developers and financiers
3. Commercial charcoal production facilities are built under a competitive bidding mechanism to deliver objectively verifiable renewable biomass-based charcoal and GHG emission reductions.	3.1. A tender mechanism is set up by MMA to support investment in a first batch of commercial production facilities for clean, renewable charcoal
	3.2. Targeted support is given to facilitate planning and permitting for the charcoal conversion projects selected under the tender process
	3.3. A first batch of commercial, renewable biomass-based charcoal production facilities is procured and put into operation by the private sector and greenhouse gas emission reductions are being monitored and verified, and payments are made for delivered performance
	3.4. Best practices and lessons learnt are collected and disseminated to promote clean charcoal production across the I&S sector in Brazil and abroad (need to assess the outputs)

31. Project Implementation Arrangements. The Project would be implemented under UNDP's Direct Implementation modality (DIM). The Ministry of Environment (MMA) would assume responsibility for executing the Project but would coordinate closely with the Ministry of Development, Industry and Commerce (MDIC), the Ministry of Science, Technology and Innovation (MCTI), the Government of the State of Minas Gerais (MG) and UNDP through the establishment of a Project Steering Committee (PSC). A senior staff member from MMA would be designated as national project director responsible for ensuring that project implementation follows national policy and standards. A Project Management Unit (PMU) led by a national project coordinator, also an MMA staff member, would also be established responsible for the overall coordination of the Project including operational planning, supervision, administrative and financial management and the adaptive management of the Project based on inputs from the Project M&E plan.

32. For purposes of the present project, the Sustainable Charcoal Technical Commission (SCTC) (foreseen to be created by the end of 2013) would: (i) review the MRV system proposal that would be developed under the Project; (ii) provide technical recommendations for the PSC on how to improve the allocation of project funds to catalyze resources for the operationalization of the Sustainable Charcoal Plan; and (iii) issue recommendations concerning implementation, monitoring, evaluation and revision of project activities as requested by the PSC.¹¹

33. UNDP as the project's GEF Implementing Agency (IA) reporting to the GEF Council would be responsible for financial administration and for obtaining the envisaged project outcomes.

34. Project Timing and Milestones. See Table 2 below.¹²

Table 2. Key Charcoal Project Formulation and Implementation Dates

PIF Approval Date	March, 2012
PPG Approval Date	March 2012
CEO Endorsement submitted to GEF	January, 2014
CEO Endorsement of Charcoal Project approved	January, 2014
1 st meeting of Project Appraisal Committee (PAC)	February 2014
Project Document Signature Date (project start date):	June 2015
1 st Project Advisory Committee (CAPSidSus) meeting	April 2016

¹¹ This may actually be referring to the PAC as there is no PSC in the project.

¹² By convention Project implementation began with the UNDP signing date of the PRODOC.

Date of Inception Workshop (within 3 months from project start-up date)	April 2016
1 st Tripartite meeting (ABC, UNDP, MMA)	December 2017
Expected Date of Mid-term Review ¹	June 2017
Actual Date of Mid-term Review	June, 2019
Expected Date of Terminal Evaluation ¹	July, 2019
Original Planned Closing Date ¹	Dec, 2019

¹As specified in Project PIR 1

35. Main Stakeholders. The main stakeholders identified in the project's CEO Endorsement Template were the Federal Government (MMA, MDIC, MCTI), State Government of Minas (MG), financing institutions (development banks BNDES, BDMG and state R&D fund FAPEMIG), private enterprises (integrated iron & steel companies, small pig iron producers, charcoal producers, electricity companies), sector organizations (AMS, G-6, AçoBrasil), universities and research organizations (Federal University of Viçosa - UFV, and *Fundação Centro Tecnológico de Minas Gerais* - CETEC) and charcoal professionals. Under the MoU between MG and UNDP, civil society organizations (CSOs) would also be included as stakeholders with the aim to include transversal themes into the sustainable charcoal agenda.

III. Findings

A. Project Strategy

Project Design.

36. The PRODOC was well written and provided both a good argument for the need for the Project and why GEF should fund it. Basically, this came down to a sound design along the lines of a three-legged stool supporting the establishment of an enabling policy environment, transformation of technology resulting in increased efficiency and reduced GHG emissions associated with the charcoal production process and its use in the I&E sector and training and capacity building; progress in the three components would be driven by Brazil's commitment to meeting UNFCCC GHG emission targets.

37. Considerable delay was experienced over the 39 period of project design beginning with the approval of the PIF/PPG and the signature of the PRODOC (see Table 2, above). This appeared to be primarily due to: (i) a change in government, (ii) an agreed on change in "lead" ministry for the Project, (iii) a change in approach recommended by GEFSEC from a "market-push" to a "market-pull" model eventually resulting in the payment for results tender mechanism and (iv) securing commitments from stakeholders to cover the large amount of counterpart required.

38. One significant change that occurred during project design was the strategy for Component 3 which shifted from promoting one single technology to supporting a multiple number of technological approaches through a competitive bidding process. It was thought that this would significantly reduce the project's technology risk by leveraging existing technologies currently in development facilitating the comparison of multiple approaches under one common measurement parameter (increased charcoal production efficiency directly linked to GHG emission reductions). However, as a "market pull" mechanism, it increased the market risks to the Project since the support provided would be linked to investors' decisions which were beyond the project's control. In an attempt to mitigate this risk, project design supported access to a subsidized financial package composed of low interest BNDES loans and a *FundoClima* grants. At the time of submission of the PRODOC, the risks / assumptions appeared to be correct (see below).

39. A second change was the shift in the project's lead government ministry from MCTIC to MMA. This occurred after findings from field visits during the project preparation phase indicated that MMA had the better mandate and capacity to support the Project resulting in an apparently amicable, agreement to shift project management responsibilities.

40. A third significant change involved a shift from national execution (NIM) to direct implementation (DIM) modalities whereby UNDP would take on the role of Implementing Partner. This was in response to a request from MMA on August 2014, some two months after the PRODOC was signed. With UNDP responsible for project execution it seemed that the approach was successful in part due to the "dilution" of project ownership among government partners (i.e., any failure in project implementation would be by default UNDP's responsibility).

41. The Mission found the PRODOC ambiguous with respect to clearly distinguishing between different sets of institutional actors in Brazil's complex I&S sector; not describing clearly the sometimes "porous" relationship between the large integrated companies and third party pig iron and/or charcoal producers and the relationships between the pig iron producers and the independent charcoal producers themselves.

42. Project design was also not clear on what role the Project would play with the small/medium-scale charcoal producer. There did not appear to be any resources from the PPG to support preparation activities focused on the small/medium producer. Nevertheless, early in the design phase apparently a tangible role for this group was considered (1 million R\$ was initially estimated in the budget). However, this role seemed to take on a lower profile over the course of project design. This was attributable to: (i) a paucity of data impeding a clear understanding what the Project could do to serve this group; and (ii) an apparent lack of interest from the producers in participating in the Project without seeing successful, on-the-ground demonstrations first; a view that was at least partially shaped by their earlier participation in a SEBRAE-led project (and other similar projects supported by a range of private and government institutions) that had focused on small-scale forest

plantations for charcoal producers that had suffered a significant setback due to drop in market demand related to due to Brazil's recession. Finally, in what appears to be evidence for a dual-track approach looking towards the future, ample opportunities were made available for this group under Outcome 2 during the first half of the Project. This was to prove a correct strategy based on results achieved by the time of the MTR with this target group.

43. Despite these shortcomings project design was (and remains) highly relevant to both Brazil's and in a reflection of same, UNDP's priorities. Project design fully supported Brazil's institutional and policy framework, including its legal commitments to the UNFCCC. Similarly, activities supported under the Project were compatible with UNDP's assistance to Brazil under the Development Assistance Framework 2012 – 2015 (UNDAF) and focused on the areas in which UNDP had a clear comparative advantage within its mandate.

44. The PRODOC did not address gender issues in its design as women and girls were not designated beneficiaries of the Project. Disaggregation of data to track participation in project supported activities by gender (e.g., training workshops) was not a requirement of GEF at the time of project approval.

Results Framework/Logframe.

45. The Mission found that the Results Framework/Logframe was technically robust and made ample use of SMART indicators to measure progress toward achievement of project objective/outcomes (e.g., GY, GHG emission reductions). Nevertheless, there was considerable ambiguity among some of the indicators and/or targets between the DO, Outcomes and METT monitoring tools. Specifically with respect to the PO indicators these were: (i) lack of clarity on what constitutes a "policy regulatory framework" and its relationship to the target to be "adopted" at EOP; and (ii) under the GHG emissions indicator what constitutes "indirect" GHG emission reductions as no methodology was described in PRODOC on how this was determined (see Table 3). With respect to the project's Outcome 1 EOP targets (iii) what constitutes "adopted" of a detailed "strategy" by MG government. See Table 4, below.

46. In addition, with the benefit of 20:20 hindsight that comes with an MTR, the Mission found the following indicators/targets unrealistic: (i) the PO target of leveraging investment capital of US\$ 40 million and (ii) the Project putting in place "financial incentives." (Outcome indicator 1.4).

47. Given the baseline conditions at the time of the submission of the PRODOC, the METT ratings to be achieved by EOP were found to be unrealistic. Specifically (i) a policy/regulatory framework adopted and enforced (5), (ii) the establishment of financial facilities (e.g., credit lines) operationalized and funded and supported with sufficient demand (5) and (iii) institutional capacity utilized and sustained (5). For more detail, see Annex L.

48. Finally, there were no mid-term targets proposed which the Mission could use to quantitatively assess progress toward achieving the stated project objective and outcomes. It is understood that this was not a GEF requirement for EA at the time (GEF 5).

B. Progress towards Results

Progress towards Project Objective.

49. At the time of the MTR significant progress has been made toward achieving the project objective, "develop [ment] and demonstrate[ion of] enhanced, clean conversion technologies for renewable, biomass-based charcoal production, supported by an effective policy framework." This statement is supported by the: (i) the implementation of proposals supported under the tender mechanism (7 proposals from 5 companies under execution); (ii) two kiln-furnace system demonstration units (UDs) installed and in use by producers within commercial sites in *Zona da Mata* region (small producer) and in Northwest of Minas Gerais (medium sized producers), respectively; (iii) the initial results of increase of gravimetric yields for both small and large charcoal producers (ranging between 32 and 36 % dependent on specific technology and scale of producer (still to be confirmed by audit); and (iv) projections of GHG emission reductions to be achieved by EOP. In light of the two planned additional proposals to be supported under the tender mechanism target emissions reductions are likely to continue to grow. The first call is aimed at supporting small producers to adopt better

kilns and production processes. In addition, the training program seeks to install at least three more kiln-furnace system UDs and strengthen research and education institutions in Minas Gerais to foster continuous technology improvement and training support to small and medium charcoal producers.

50. Progress towards achieving the policy target is less clear. The target of a “strategy” contributing to a policy regulatory framework in support of renewable charcoal use in MG (confirmed by the target in the METT) is relatively straight-forward. It is also clear that the Project has contributed to elements that would likely be included in any such strategy. These include: (i) development and operationalizing the MRV, (ii) a study on financial incentives in support of the sector, (iii) discussions that resulted in including renewable charcoal production incentives in the recently approved National Plan for the Development of Planted Forests (*Plantar Florestas*) and (iv) discussions that resulted in DN 227/2018, the first Minas Gerais norm focused on charcoal production.¹³ What is not clear is how the latter are integrated into a comprehensive strategy and whether how and when will the on-going consultancy actually lead to the “adoption of a “meaningful” strategy.

51. Unfortunately, it is highly unlikely that the Project will meet its target of leveraged capital investment of US\$ 40 million in light of the loss of *FundoClima* and BNDES funding. However, this loss in co-financing was partially offset by participating company investment in financial and in-kind contributions to build/improve their commercial production facilities.

52. More detail on progress towards achievement of project objective against EOP targets is provided in Table 3 below.

Table 3. Progress towards Results Matrix (achievement of project objective against End-of-project Targets)

Project Strategy	Indicator	Baseline Level	Status at Time of MTR	EOP Target (PRODOC)
Objective: To develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production, supported by an effective policy framework.	Number of commercially demonstrated efficient charcoal conversion technologies.	at least 3 technological concepts under development by private firms ¹ ; no commercial demonstrations (as of 2013).	<ul style="list-style-type: none"> - there are currently 7 charcoal production/use proposals, from five companies, under execution with support of tender mechanism. - a recently concluded consultancy analyzed 5 business models. The results of the analysis will be disseminated in the next months. - the completion of studies to improve and adapt UFV's conversion technology kiln-furnace system (<i>sistema fornos-fornalha</i>) are due in September/2019 supported by demonstration units installed in Zona da Mata (small producer) and Northwest MG (medium sized producers), respectively. 	at least: (i) 3 charcoal production plants in commercial operation; (ii) 3 successful business models; and 1 proven conversion technology
	Average gravimetric yield implemented technologies	25% for small producers (hot-tail) 29% for industrial (brick kiln)	<ul style="list-style-type: none"> - the kilns-furnace system is expected to reach over 30% in gravimetric yield. Results of field tests in commercial demonstration units will be disseminated in September/2019. - industrial technologies supported within the tender mechanism have demonstrated progress towards achieving gravimetric yields higher than 32%. Results will be audited at the end of tender mechanism contracts in. 	32% or better
	Policy and regulatory framework (for renewable charcoal use in Minas Gerais)	No strategy in place (METT = 1)	No strategy in place yet. A company selected in June/2019 is expected to produce a sector wide strategy at end of 2019 subsequent to which it will be submitted for public review.	Strategy adopted (METT = 4)

¹³ DN 227/2018 establishes procedures to monitor and reduce atmospheric emissions of charcoal kilns from planted forests and to evaluate air quality in its surroundings.

GHG emissions reductions (Mton CO ₂ eq)	0	The commitment of all tender mechanism supported companies is projected to result in 300,315 tons/year of charcoal production capacity with more efficient technologies and an average emissions reduction of 1,415 kg CO ₂ eq/ton of charcoal. Therefore, around 425 kton of emissions reductions will be achieved each year.	direct: 432 kton (CCM-2) indirect: 700 kton/yr (CCM-2); 200 kton/yr (CCM-3)
Investment capital leveraged for efficient charcoal production	0	Tender mechanism-supported companies contributed R\$ 56 million in financial and in-kind contributions to build/improve their commercial production facilities	US\$ 40,000,000

¹This includes Plantar, ArcelorMittal, CEMIG, RIMA.

Progress towards Outcomes.

53. As one would expect progress towards achieving the project's three outcomes tracks progress towards achieving the project objective described above. Specifically, for Outcome 1, "a policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions" with the exception of the policy indicator (discussed above) there has been substantial progress demonstrated through: (i) establishment of an operational MRV system supported by training that will migrate from the PMU to MMA before EOP; (ii) the development of methodologies to assess economic performance within the selected charcoal production value chains;¹⁴ (iii) two financial incentive consultancies (one still active) will assess the results of financial incentive schemes; and (iv) the establishment of two demonstrative units built and serving as bases for operational and structural studies carried out by University of Viçosa (UFV), which are scheduled to be concluded by September/2019.

54. For Outcome 2, "the technology and human capacity base for clean charcoal conversion in Brazil is strengthened by technical assistance and targeted training" progress at the time of the MTR has been marked by: (i) the on-going technology testing program; (ii) a new call for proposals from research and education institutions in Minas Gerais to build at least three additional UD's and link them to research and rural extension activities; (iii) the analysis and improvement of existing business models leading to cleaner, more efficient, charcoal production carried out during the first six months of 2019 and the development of additional business plans for using kilns-furnace system to be used in the project's training program. A seminar focused on business models shall take place by October/2019; and (iv) a series of public outreach (e.g., the recently completed 5th Charcoal Forum) and training activities (e.g., at the time of the MTR more than 19 training courses have been offered and 367 people trained) supported by training materials (see Table 5, Annex O).

55. For Outcome 3, "commercial charcoal production facilities are built under a competitive bidding mechanism to deliver objectively verifiable renewable, biomass-based charcoal and GHG emission reductions" at the time of the MTR the main result from the tender mechanism was 7 proposals selected from 5 companies (Plantar, Rima, ArcelorMittal, Vallourec and PCE/Cossisa) of which three will complete their contracts and will deliver the results of GHG reductions emission and/or increase of gravimetric yield in the second semester of 2019. It is projected that tender mechanism supported companies will result in 300,315 tons/year of charcoal production capacity with the adoption of more efficient technologies. Similarly, technologies supported within the tender mechanism have been demonstrating progress towards achieving gravimetric yields higher than 33%. Results will be audited at the end of the tender mechanism contracts. Resources derived from savings associated with exchange rate differentials were reallocated under this component to support a second and third call for proposals for support small producers and research institutes, respectively in 2019. Finally, there is an on-going consultancy to prepare a document on good practices that will be followed by a seminar in September/2019. An international event is planned to be organized during the last semester before EOP.

¹⁴ Socio-environmental performance of commercial facilities supported within the tender mechanism is currently under review by Imaflora. Social, economic and environmental performance of small charcoal producers will be assessed with "ISA" (Sustainability Indicators in Agrosystems) methodology, developed by the Minas Gerais Government

56. Additional detail on progress towards project outcomes at the time of the MTR can be found below (see Table 4).

57. Remaining Barriers to Achieving the Project Objective.). The principal barrier remaining to be faced by the Project will be to achieve the “enabling policy environment” required as one of the three legs of the stool that appears increasingly unlikely given the current institutional landscape and time and resources remaining in the Project.

Table 4. Progress towards Results Matrix (achievement of project outcomes against End-of-project Targets)

Project Outcomes	Indicator	Baseline Level	Status at Time of MTR	EOP Target (PRODOC)
Outcome 1: A policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions.	Renewable charcoal strategy in MG	No strategy to stimulate charcoal technology development.	A company was selected in June 2019 through an open competition to put forward the elaboration of the strategy and projected to be finalized by late 2019/early 2020	Detailed strategy designed and adopted by MG State Government
	MRV system for charcoal production and GHG benefits for I&S sector agents	No system in place.	MRV system design was concluded in December 2018. After testing, adjustments were made to make the platform more user friendly. The platform is available in B2ML servers (http://sidsus.b2ml.com.br/sidsus/).	MRV system implemented and operational
	Acceptable methodologies and criteria to assess charcoal production chains.	No acceptable methodology in place.	Within the project's MRV system methodologies based on CDM were developed to assess emissions reduction in three clusters: gravimetric yield (charcoal production), pyrolysis gases burning and fuel substitution.	Acceptable methodologies in place to perform quantitative evaluations/assessments
	Financial incentives for (a) use of renewable charcoal by I&S sector in MG; and (b) investment in efficient, clean charcoal production chains	No incentives for (a) renewable charcoal use and (b) investment in efficient, clean charcoal production chains.	A financial incentives assessment consultancy concluded in August 2018 supported by a second, future consultancy to assess the results of financial incentive schemes, together with the business models consultancy and the two technical and economic feasibility studies on charcoal production with kilns-furnace system will provide the basis for the elaboration of the renewable charcoal strategy.	Incentives in place for: (a) renewable charcoal use and (b) investment in efficient, clean charcoal production chains.
Outcome 2: The technology and human capacity base for clean charcoal conversion in Brazil is strengthened by technical assistance and targeted training.	Charcoal technology test program carried out.	Isolated technology development efforts with low sector coordination level.	Charcoal technology test program is under way and is scheduled to be concluded in September 2019.	Concerted charcoal technology development program executed
	By-products utilization technology program carried out.	Isolated private initiatives to develop technologies for utilization of charcoal by-products.	Results of the consultancy on byproducts were presented in the public during the National Charcoal Forum (May 2019) supported by a charcoal by-products use training course. Training materials on byproducts utilization will be published and disseminated by October/2019.	Concerted by-products technology program carried out.
	(a) Number of developed business models; (b) number of expressions of interest (EoI) from local charcoal producers; (c) seminar/workshops on efficient charcoal production chains.	(a) Some business models conceived but not commercially proven yet; (b) no EoI's; (c) no seminar held.	A consultancy was contracted to register, analyze and make improvement recommendations 5 existing business models in MG during the first half of 2019 A call for EoI for support to small charcoal producers in adopting more efficient technologies, within the business models that were analyzed A seminar focused on business models is projected to take place by October 2019.	At least: (a) 4 different business models developed and accepted by charcoal producers; (b) 6 EoI's signed and (c) 1 seminar held.

Federative Republic of Brazil
Production of Sustainable, Renewable Biomass-based Charcoal for the Iron and Steel Industry in Brazil
Mid-term Review (MTR)

	(a) Training materials; (b) Number of training programs implemented	(a) no training materials developed; (b) no training program.	Training materials prepared consisted of: (a) video (2019) and (b) construction and operation manuals for kilns-furnace system (printing scheduled for August/2019). At time of MTR 19 training courses completed (367 people trained) including courses on: (a) construction and operation of kilns-furnace system, (b) carbon balance methodology applied to rural properties, (c) seminars / workshops on the use of byproducts, sustainable charcoal; production, business models, forestry etc (in National Forum on Charcoal).	(a) Training material developed; At least 3 training programs being executed.
Outcome 3: Commercial charcoal production facilities are built under a competitive bidding mechanism to deliver objectively verifiable renewable, biomass-based charcoal and GHG emission reductions.	Tender mechanism negotiated and formalized	Proposal for tender mechanism prepared by MMA	Tender mechanism completed	Tender mechanism negotiated and formalized.
	Consultancies to support project development	No consultancies	Resources reallocated to support second call to support small producers in adopting more efficient technologies published in July, 2019.	At least three efficient charcoal conversion facilities are ready for the investment phase of the program.
	(a) Number of efficient, clean charcoal production facilities in place; (b) Charcoal production per plant (tons/yr); (c) Wood-charcoal conversion rate per plant (%); (d) GHG emission reductions per plant (tons CO2eq/yr)	(a) No facilities in place; (b) no production (0 tons/yr); (c) baseline technology conversion rates are 25-30%; (d) no emission reductions (0 ton CO2eq/yr).	(a) Currently there are 7 commercial charcoal production/use proposals under execution from five companies. (b) Commitment of all tender mechanism-supported companies projected to result in 300,315 tons/year of charcoal production capacity with more efficient technologies. (c) Tender mechanism-supported technologies are achieving gravimetric yields higher than 33%. Results will be audited at the end of tender mechanism contracts. (d) Tender mechanism-supported companies projected to in 425 kton of emissions reductions per year. By EOP target emissions reductions projected to exceed targets due to the two more calls for proposals to support more cleaner, more efficient, charcoal production commercial sites launched in July/2019.	(a) At least 3 commercial facilities procured and operating, including one small-scale (under 1,000 tons); (b) 80,000 tons charcoal produced per year; (c) at least 33% conversion rate (weighted average); and (d) 21,6 kton CO2eq/yr
	(a) Documents and presentations with best practices; (b) international event to disseminate clean charcoal production	(a) No documents; No event	Consultancy on good practices currently on-going. Partial results will be presented at a seminar in September/2019. International event planned to be organized during the last semester of project execution.	(a) Documents and presentations compiled; (b) International event held.

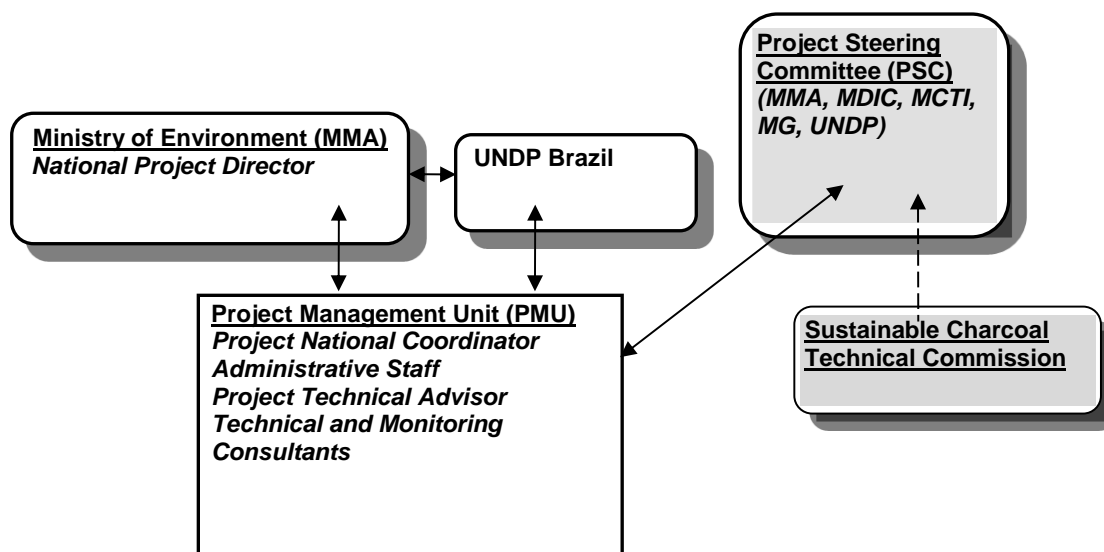
C. Project Implementation and Adaptive Management

Management Arrangements.

58. Management arrangements that existed at the time of the PRODOC are depicted in Figure 1, below. At the time of the MTR the following changes were found: (i) the SCTC was never created, (ii) there is no PSC rather this was replaced by a Project Advisory Committee (PAC), (iii) the PMU would shift from MMA to UNDP following the decision to change the implementation modality from NEX to DIM at the request of MMA, (iv) inviting MAPA to join the CAP in 2018 as a result of a shift in responsibility for forest plantations from MMA to Agriculture and (v) minor changes in the technical composition of the PMU.

59. Following approval of the Project the Tri-partite Committee (TPC) was established and has met twice since the initiation of implementation (see Table 2 Annex O)

Figure 1. Project Institutional Arrangements



60. During execution the Project faced a number of external challenges that adversely affected the contextual environment in which implementation occurred. Presented in a chronological sequence, the associated impact on the Project and what adjustments were made to mitigate impact these included:

- Economic crisis. After almost a decade of strong growth (2002-2013), Brazil entered into the worst recession in its history in 2015 and 2016 (-3.8% and of -3.6 % of GDP, respectively). The crisis was due to the fall of commodity prices and a drop in consumption and in investment.¹⁵ This created severe pressure on state budgets including constraining their ability to pay the salaries of state employees resulting in many civil servants refusing to show up at work or quitting the civil service all together in particular in MG. This had a significant adverse effect on the Project by preventing the establishment of permanent relationships with counterparts in the MG government needed to support implementation. The recession also affected GOB counterpart funds resulting in the rationalization of budgets and the availability of counterpart financing. The PMU responded by increasing the number of visits to state offices in MG and built up relationships with public-private sector associations and NGOs that were less severely affected;
- Impeachment. The impeachment of Dilma Rousseff, the 36th President of Brazil, began on 2 December 2015 subsequent to which her powers were suspended by the Senate in 12 May, 2016 followed by her removal on 31 August 2016 and replacement by an acting president (her former vice president).¹⁶ The political uncertainty adversely affected the Project in particular in limiting the opportunities to launch new policy initiatives. The PMU responded by focusing on the more technical aspects of the Project and contracting activities in support of policy initiatives (e.g., studies) but not engaging in promoting policy formulation itself;

¹⁵ NORDEA, 2018. Maaprofilii Brazil. Brazil: Economic and political overview. The economic context.

¹⁶ BBC New, 31 August, 2016. "Brazil Impeachment: Key Questions"

- Price of Oil and Oil Royalties. At the time of the PIF the price of oil was US\$ 100 per barrel which by 2016 had declined to US\$ 28. This situation was exacerbated by an act of the Federal Congress in 2013 that targeted the oil royalties that were paid into *FundoClima* and BNDES earmarked for activities promoting Brazil's CC agenda. The act required that the activities supported by royalties be broadened and diversified to include education, health and other urban issues. The drastic decline in the price of oil combined with the diversification of the use of royalties to support other sectors, had the impact of reducing monies available for CC activities by approximately 75 %. As a result, the co-financing commitments made by *FundoClima* and BNDES (grants and loans totaling US\$ 25 M) were never met. The response of the PMU was to open a series of dialogues with regional development banks (e.g., BDMG and NE Bank of Brazil) to establish credit lines and seek other sources of financing. Unfortunately, these efforts met with limited success due primarily to lack of lending "products" that met the sectoral needs of charcoal-based I&S sector;

- US\$. Brazil's economy started to grow again achieving annual growth of 1% and 1.4 % respectively for 2017 and 2018. However, inflation grew (slightly) reaching 3.7% in 2018 and was one factor contributing to a strengthening of the US\$ against the R\$. These factors worked in favour of the Project at least in terms of increased "buying power" of the US\$ denominated grant funds for "goods and services" denominated in R\$ providing the "space" to support additional activities. The response from the PMU has been to consult project partners to determine how best to use these funds in support of achieving the project objective;

- 2018 elections. The elections were marked by a highly polarized campaign and the election of a candidate from the far-right PSL. This affected the Project by contributing to an environment at both the federal and state levels that prevented work on any policy initiatives further affecting progress on the project's policy outcome. The response from the PMU was to continue to work with government counterparts but focusing mostly on the technical aspects of the Project;

- Paris agreement. Under the Kyoto Protocol to meet the I&S sector's Nationally Appropriate Mitigation Actions (NAMA) Brazil prepared a National Plan on Emissions Reduction Plan for the Charcoal Steel Industry in 2010. At the time of the PRODOC the country had further agreed to prepare an action plan for mitigation and adaptation in agriculture, energy and charcoal. For the I&S charcoal sector a Sustainable Charcoal Plan led by MDIC would focus on: (i) promoting the reduction of emissions, (ii) avoiding deforestation of native forests and (iii) increasing competitiveness of the Brazilian I&S industry in the context of a low-carbon economy. This would be facilitated by creation of the Sustainable Charcoal Technical Commission (SCTC) that for project purposes would: (i) review the MRV system proposal that will be used under the Project; (ii) provide technical recommendations for the PSC on how to improve the allocation of project funds to catalyze resources for the operationalization of the Sustainable Charcoal Plan; and (iii) issue recommendations concerning implementation, monitoring, evaluation and revision of project activities as requested by the PSC. Neither the SCTC nor the Plan were ever created. These factors, together with the Paris Agreement that resulted in a shift to voluntary, economy-wide targets embodied in Intended Nationally Determined Contributions (INDC), may have combined to contribute to undermining progress toward the creation of a favourable policy, Outcome 1 under project's policy component; and

- Brumadinho dam failure. Vale's Brumadinho dam failure occurred on 25 January 2019 when a tailings dam failed near Brumadinho, Minas Gerais resulting in the death of at least 248 people. The stock price of Vale S.A., fell 24%, losing 71.3 billion reais (US\$19 billion) in market capitalization, the biggest single day loss in the history of the Brazilian stock market. At the end of January 28, Vale's debt was downgraded to a rating of BBB- by Fitch Ratings.¹⁷ The impact on the Project was indirect largely through contributing to increased prices in the I&S sector and reduced access to MG agencies who were focused on the crisis in Brumadinho.

61. Despite these not inconsiderable challenges, with the exception of the policy component, at the time of the MTR the Project appears to be well within reaching or surpassing its EOP targets. This seems to be due to the combined efforts of a smoothly function "coalition" of stakeholders consisting of the PMU, CAP, UNDP and a large number of representatives representing a range of sub-sectors.

62. The PMU deserves special mention for demonstrating the ability to navigate the previously cited

¹⁷ Laier, P. (28 January 2019). "Vale stock plunges after Brazil disaster. Reuters

challenges successfully. The CAP also appeared to be a key factor in facilitating the project's implementation over the 3 years + since its approval. CAP's representatives were and are mostly technical (most were engineers) and focused on achieving technical results. For the Project, this was useful to overcome changes in government as most of the people stayed.

63. The partners were satisfied with both the support of the PMU and UNDP though there was a widespread misunderstanding of what the source of project funding is (UNDP vs. GEF), who the primary project stakeholder is (GOB vs. UNDP) and understanding of the role of the PMU (vs. UNDP).

Work Planning.

64. There were initial delays in the project's first year due primarily to: (i) time required to hire the project's technical advisor (following an initial unsuccessful selection process); the full project staff were only put in place in May 2016 (some 8 months after signing the PRODOC); (ii) working out the specifics of the innovative payment for performance tender mechanism which was new to UNDP, GOB and the Joint Implementation Facility (JOF) which had to approve the mechanism given the amounts of monies involved in the process and (iii) rejecting some of the consultants initial products on quality grounds. These factors may have contributed to the delay in the inception workshop until April 2016, some 7 months after the signing of the PRODOC (it was projected for 3 months after PRODOC approval). The initial project closure had been specified for December 2019. This was based on a project start date determined by the signing of the PRODOC of December 2015 for this 5 year project. Since the actual signing was in June 2015 the PMU requested that the closure date be changed to reflect the 6 months to June 2020; a request that was subsequently executed in May 2019. Finally, there is an apparent request for consideration from MMA to extend the project one year to facilitate the transference of the MRV from the PMU to the ministry.

65. There exists a clear AWP process that follows UNDP requirements and provides flexibility to adjust budget/activities at mid-semester of the project year. This enabled the Project and PMU to overcome most of the project's initial delays by the time of the MTR. A timeline is provided in Annex N.

Quality of Supervision.

66. Project supervision provided by UNDP appeared satisfactory. PIRs are prepared with inputs from RTA by way of Skype with the CO and PMU. A review of the PIRs completed to date indicate that many of the issues that would potentially affect the project were flagged early in project execution. For example, the potential loss of co-financing was flagged in PIR 1 and recommended actions were for the PMU to make contact and initiate discussions with regional development banks regarding availability of alternative sources of financing. Similarly, in response to the high turnover of counterparts in MG due to the recession and job insecurity, the recommendation was made to establish closer collaboration with both federal and local governments as well as the private sector. During the period covered by the MTR the RTA visited Brazil once and participated with the CO in a review of the GEF-supported CC portfolio of projects including the Charcoal Project. Comments on PIRs from CO and RTA appear highly relevant and provide sound guidance

Quality of Execution.

67. In light of the number of challenges faced by the Project, project progress towards the PO and Outcomes at the time of the MTR seems exceptional. Despite facing a "perfect storm" of challenges the PMU, together with support from the CAP, UNDP and partners were able to overcome most of these providing an excellent example of (near-continuous) adaptive management through time.

68. The decision to proceed on a twin-track approach to the small/medium charcoal producer appeared to be the correct one. By the time of the MTR there was ample interest for the Project to support a two-phased request for proposals (similar to the earlier tender mechanism) for this group.

69. Financial management, disbursement and audit all seemed to be in compliance at the time of the MTR (see the next sections for more detail).

Finance and Co-finance.

70. At the time of the MTR (June, 2019) figures show a cumulative disbursement of 4,354,206 US\$ (not including commitments and planned activities) representing 68 % of the total grant approved amount as stated in the PRODOC (see Table 5 and Figure 2). The PRODOC projected 6.38 million US\$ or 89 % of the grant would be disbursed at the time of the MTR (Table 6)

Table 5. Cumulative Project Disbursement by Year Compared to PRODOC in US\$ (as of June 2019)

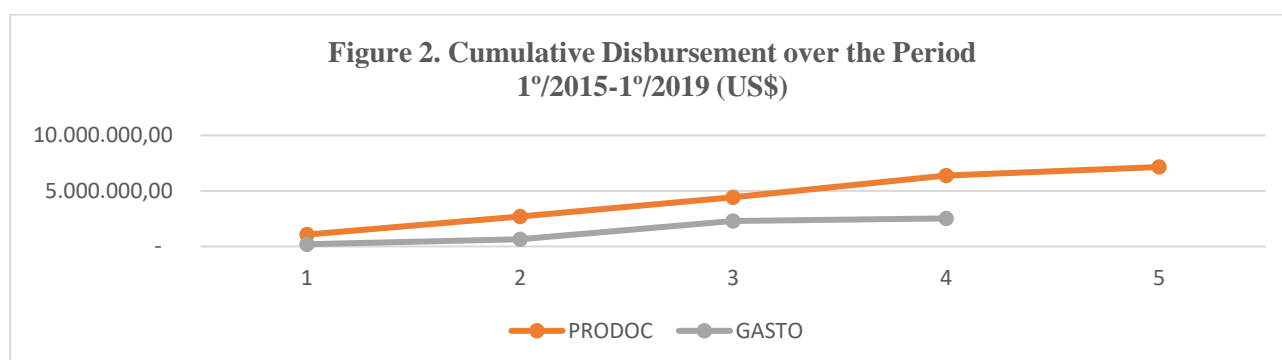
	2015-2016	2017	2018	2019 ¹	2020 ²	Difference
PRODOC	1,068,000	2,695,500	4,412,000	6,376,500	7,150,000	0
Disbursed	195,992	655,817	2,281,360	4,354,206	5,776,730	1,373,270
%	18	24	52	68	81	19

¹Consists of 2019 actual expenditures (up to June), commitments (signed contracts) and planned activities.

²Consists of 2020 commitments (signed contracts) and planned activities.

Table 6. Financial Disbursement and Delivery at time of MTR in US\$ (as of 30 June 2019)

Category	Results (%) of Total Grant	US\$
Cumulative disbursement	60,89	4,354,206
Cumulative delivery (against approved PRODOC)	89,18	6,376,500



71. Under-delivery in the first year appeared to be primarily due to delays in hiring the project's technical advisor and testing and fine-tuning the innovative payment for performance tender mechanism. Low delivery in part was also built into project design. As the majority of budget was for the tender mechanism and its phased payment schedule against performance targets much of the grant was not due to be disbursed until the project's later years (see Tables 4a – 4b, Annex O). These factors were further exacerbated by UNDP's approach to budget allocation in the PRODOC that projects equal annual disbursements of project budget across LOP. It was recognized that for evaluation purposes this could result in structural under-disbursement in the early years of the project. Finally, overshadowing these factors were the effects associated with the recession and its impact on budgets and government staff affecting the pace of project implementation.

72. At time of the PRODOC total project co-financing was an estimated US\$ 36.8 million much of it in cash (Table 7a shows these figures in US\$). At the time of the MTR there was a significant shortfall of US\$ 21 million or approximately 57 % less than what was expected at the initiation of the Project. Despite MDIC and MMA submitting a letter confirming its commitment to support the Project through BNDES and *FundoClima* they were by far the largest sources for the shortfall in co-financing. This was attributable to factors outside of the control of the PMU associated with the dramatic decline in the price of oil, 2013 congressional law diversifying the use of funds away from climate change objectives and the freezing of all disbursement altogether associated with the *lava jato* investigation. The financial crisis also had a significant impact on government budgets, both at Federal and state levels, forcing a reallocation of available funds to cover financial shortfalls elsewhere in their respective budgets. As a result of the significant weakening of the national currency against the US\$ when converted to R\$ this co-financing gap "shrinks" to R\$ 1,213,409 (US\$ 313,542).

73. Shortfalls in co-financing as measured in constant US\$ were partially covered by financing in cash from some of the partners including the big I&S partners (Table 8). It was the Mission's view following interviews with a number of partners (e.g., EMATER, SEBRAE, SENAR etc.) that a significant amount of additional co-financing, mostly in-kind, exists in support of project activities, including UNDP itself, but these have not been accounted for by the PMU.

Table 7a. Comparative Assessment of Sources and Amounts of Co-Financing at time of MTR (in Constant US\$ 2012)

Sources of Co-financing (at time of CEO Endorsement)	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount at time of Project Approval (US\$)	Actual Co-financing Amount at time of MTR (US\$) ¹	Difference in Co-financing Amount at time of MTR (US\$)
National Government	Ministry of Environment (MMA)	Cash	4,500,000	711,596	-3,788,404
National Government	Ministry of Science, Technology and Innovation (MCTI)	Cash	2,000,000	200,218	-1,799,782
National Government	Ministry of Economy (ME, formerly MDIC)	In-kind	-	301,953	+301,953
State Government	State of Minas Gerais	Cash	2,100,000	259,066	-1,840,934
Private sector	Company loans (through BNDES)	Cash	25,000,000	-	-25,000,000
Private sector ²	Private sector companies supported by tender mechanism	Cash and in-kind	2,900,000	14,460,745	+11,550,745
Other partners	UFV	In-kind	-	10,013	+10,013
GEF Agency	UNDP	Cash	200,000	0	- 200,000
GEF Agency	UNDP	In-kind	100,000	108,435	+ 8,435
Total Co-financing			36,800,000	16,042,026	- 20,757,974

¹US\$ = R\$ 1.72 (official UN exchange rate as of March 2012)

²Companies supported by the tender mechanism offered R\$ 5,9 million in co-financing (investment/in-kind), amount that will be authenticated during the audit at the end of the contracts (results payment).

Table 7b. Comparative Assessment of Sources and Amounts of Co-Financing at time of MTR (in R\$)

Sources of Co-financing (at time of CEO Endorsement)	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount at time of Project Approval (US\$)	Co-financing Amount at time of Project Approval (R\$) ¹	Actual Co-financing Amount at time of MTR (R\$) ²	Difference in Co-financing Amount at time of MTR if considered exchange rate of project approval (R\$)
National Government	Ministry of Environment (MMA)	Cash	4,500,000	7,740,000	2,753,880	- 4,986,120
National Government	Ministry of Science, Technology and Innovation (MCTI)	Cash	2,000,000	3,440,000	774,843	- 2,665,157
National Government	Ministry of Economy (ME, former MDIC)		-	-	1,168,557	1,168,557
State Government	State of Minas Gerais	Cash	2,100,000	3,612,000	1,002,585	- 2,609,415
Private sector	Company loans (through BNDES)	Cash	25,000,000	43,000,000	-	- 43,000,000
Private sector	Private sector companies supported by tender mechanism	In-kind	2,900,000	4,988,000	55,924,333	50,936,333
Other partners	UFV	In-kind	-	-	38,750	38,750
GEF Agency***	UNDP	Cash	200,000	344,000	-	- 344,000
GEF Agency***	UNDP	In-kind	100,000	172,000	419,643.	247,643
Total Co-financing			36,800,000	63,296,000	62,082,591	-1,213,409

¹ US\$ 1 = R\$ 1,720 per official UN exchange rate for March 2012)

² US\$ = R\$ 3,87 per official UN exchange rate for June 2019).

Table 8. Additional Sources and Amounts of Co-Financing Secured and Projected at time of MTR
(in US\$)

Sources of Co-financing (following CEO Endorsement and MTR)		Type of Co-financing (cash, in-kind)	Amount of Co-financing (US\$) ¹
Confirmed			
UFV		Cash, in-kind	10,013
Projected			
Private sector	Plantar	Cash, in-kind	1,663,552
Private sector	Rima	Cash, in-kind	2,583,979
Private sector	Vallourec	Cash, in-kind	2,015,504
Private sector	ArcelorMittal	Cash, in-kind	749,354
Private sector	ArcelorMittal	Cash, in-kind	4,713,017
Private sector	PCE/Cossisa	Cash, in-kind	1,442,067
Private sector	Rima	Cash, in-kind	1,283,259
Total Additional Co-financing			14,460,745

¹US\$ = R\$ 3.87 (July 2019)

74. Adequate financial management controls appear to be in place and working and only minor budget revisions were requested of and approved by UNDP at the time of the MTR. These adjustments are built into the AWP process and if needed normally occur at the onset of the second half of the project year. Of particular note was the absence of need among the I&S partners for TA supported under Component 3 which was reallocated to other activities.

75. **Audit.** As a project executed under the DIM modality UNDP audit procedures apply. As a result, these will be internal audits triggered by projects reaching certain disbursement thresholds. At the time of the MTR these had yet to be reached and no audits conducted. The first project audit is scheduled for October 2019.

Project-level Monitoring and Evaluation Systems.

76. In response to a request from the Mission for the completion of a series of data tables prior to its arrival in Brazil, the PMU responded and returned the completed data tables in a timely fashion facilitating the preparation for the field portion of the mission (see Annex O). This was considered a very practical, evidence-based indicator of an effective and well-functioning M&E system. This conclusion was supported by a review of the PIRs and their respective tables measuring progress towards the PO and Outcomes that responded well in terms of conformity with the indicators and targets specified in the PRODOC's Results Framework/Logframe. Data were not disaggregated to assess the role of gender in the Project but it must be noted that women and girls were not direct beneficiaries of the Project nor was this a GEF requirement at the time of project design. Nevertheless, it was recognized that UNDP has attempted to increase consideration of gender in project implementation for example through supporting a consultant to evaluate selected UNDP projects in Brazil, including the Charcoal Project, for purposes of identifying opportunities to main-stream gender into project activities. As noted above, monitoring co-financing, in particular in-kind contributions could be improved.

77. Technical monitoring of performance was critical to the tender mechanism and was done by the hiring of consultants responsible to audit the winners of the tenders in particular monitoring and assessing progress on GY associated with the project's demonstration units. At the time of the MTR, technical monitoring has also begun to test the MRV platform which became operational in late 2018.

78. UNDP provides a three-tier supervision, oversight and quality assurance role (funded by the GEF agency fee) involving UNDP staff in Country Offices and at regional and HQ levels. The independent quality assurance role supports the Project Board and PMU by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed.

Stakeholder Engagement.

79. Stakeholder engagement was considered early in project design and called for the work plan and logical matrix to be presented during the inception workshop. Potential stakeholders were invited to the 1st Seminar of the Project held in June 2016 in Belo Horizonte (this was attended by 129 people representing a diverse range of organizations/companies and state agencies).

80. In response to loss of counterparts in MG due to budgetary constraints, the PMU reached out to other potential partners representing private companies, public-private service providers and universities formalizing their participation in the Project. This also fit well the project's exit strategy; one based on leaving a number of strengthened institutions capable of offering support to private sector development and public policy formulation in support of sustainable charcoal production. Many of these partnerships were formalized through the two-step payment for results tender process built into project design (a process beginning with a request for expression of interest followed by request for proposals) in support of sustainable charcoal production technologies. Where selected, these partnerships were formalized through MOUs, LOAs and other formal and informal tools. This resulted in a wide-range of partners (8) established early into project implementation through different mechanisms(see Table 3, Annex O).

81. In addition, other partnerships were sought with associations / syndicates (e.g., AMIF and SINDIFER) representing groups of stakeholders severing to leverage their networks to more effectively communicate with their respective memberships. To ensure greater impact from these partners, an informal Technical Support Group was created in July 2017, encompassing the following sector entities: AMIF (AMS/Silviminas at the time), ABRAFE, Aço Brasil, ABM, and SINDIFER for purposes of providing analysis and comments to consultancy products developed under Outcome 1 (legal framework, alternative production chains, MRV, financial incentives) and 2 (byproducts).

82. Stakeholder engagement is also encouraged through Brazil's "law of transparency" that facilitates providing access to project-generated data. Finally, selected project-supported activities have public consultations built into their LOAs (e.g., public review of strategic framework).

Reporting.

83. No issue was identified with respect to the Project meeting GEF/UNDP reporting requirements. Specifically at the time of the MTR: (i) three PIRs had been produced in a timely fashion and provided detailed information and demonstrated continuity in project activities, progress and issues over time; (ii) detailed minutes summarizing the 6 meetings of CAP were made available; (iii) minutes of the three meetings of the counterpart to the CAP in MG and (iv) reporting per UNDP project assurance requirements followed and fulfilled and minutes from the one meeting of the project's Tripartite Group (see Table 2, Annex O).

Communication.

84. Communication appears to have been satisfactory based on interviews with many of the partners at the time of the MTR. Clearly this was one benefit derived from the early identification of several of the partners in project design. Communication also benefited from the opening of dialogue and the bringing of new partners in the project's early years in response to high rates of staff turnover in MG during the worst part of the recession. Several workshops supported under the Project brought together a spectrum of stakeholders with different perspectives which appeared to have contributed to breaking down barriers between stakeholders (multi-sub-sectorial workshops). Communication has also been facilitated by a wide range of dissemination tools (videos, pamphlets and booklets and exhibits for example as supported in the recent 5th Charcoal Forum held in MG). For more detail, see Table 6 in Annex O.

85. There was no evidence that project results have formerly reached/affected potential interested stakeholders beyond MG (e.g., Maranhão and Pará) though there seems to be several examples of information being disseminated informally (e.g., through researchers and other interested parties during the recent 5th National Charcoal Forum etc.). This gap will be partly addressed through an international "event" as called for in project design to present the results of the Project before EOP.

D. Sustainability.

86. The Project supports the UN's Sustainable Development Goals (SDGs). Specifically, to (i) ensure access to affordable, reliable, sustainable and modern energy for all (7); (ii) promote sustained, inclusive and

sustainable economic growth, full and productive employment and decent work for all (8); (iii) build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (9); ensure sustainable consumption and production patterns (12); and (v) take urgent action to combat climate change and its impacts (13). The Project also supports UNDP's Country Programme Document for Brazil (2017-2021). Finally, it supports Brazil's commitment to achieve GHG emission reductions for 2025.

87. Nine risks were identified at the time of the PIF/PPG (see Table 7, Annex O). These were reviewed with the PMU at the time of the MTR and found to be in general correctly identified and rated in both terms of probability and impact on the Project at the time of project preparation. Two risks were considered not applicable to the Project at the time of preparation (climate change impacts on the Project and feasibility of verifying GHG emission reductions since no MVR was in place at time of project approval). The probability of two other risks for the remaining period of the Project were reduced from their earlier rating (failure of private sector institutions to develop clean charcoal technologies and sector companies failing to respond to incentives provided through the tender mechanism). Two new risks to project sustainability were identified for the remaining period of the Project (absence of an enabling policy framework in MG and reduced replanting of forest plantation in the state).

88. The main risks that the Project faced that were not identified in the PRODOC were the effects associated with the economic recession and the political campaign in 2018. While the implementation of most of the project's technical activities were able to progress significantly towards project objectives and outcomes, these risks combined to undermine significantly progress towards achieving the policy component targets. A second risk that was not identified was the failure to receive the committed co-financing from BNDES and *Fundo Clima* and BNDES amounting to approximately US \$ 25 million.

89. The exchange rate risk did manifest itself but in favour of the Project as the appreciation of the US\$ against the R\$ resulted in project "savings" (US\$ 1.3 million) and a need to plan how best to allocate the additional funds in the remaining LOP.

90. Socio-economic Impact and Gender. Imaflora's work with companies supported under the tender mechanism has shown that jobs have been maintained and that work conditions are good. In the demonstration units, the Project ensures that workers are aware that in addition to achieving greater efficiencies these technologies also contribute to more healthy working conditions. The results of Imaflora's work will provide a critical input into the project's strategic policy framework.

91. With respect to gender, project design did not target women or girls as direct beneficiaries. Gender aspects identified in project design were associated with more modern project-supported technologies which were expected to benefit gender equality, increase income and capacity building programs that would help women find better job opportunities both in organizational and executive aspects of carbonization and in production of *Eucalyptus* seedlings. Following GEF policy at the time of project design, relevant data collected during project implementation was not disaggregated by gender. The Project was one of several UNDP/GEF projects that were the subject of a gender analysis in late 2018.

92. Environmental Impact. The PMU conducted an internal review/update of project impacts and concluded that there was no need for a full environmental and social assessment as a number of mitigative measures had already been included in project activities (e.g., obtaining the necessary environmental licenses/independent certifications; provision of training to partners, etc.). In particular with respect to the issue of potential expansion of planted forest within the properties managed by the companies supported under the Project (via the tender mechanism), they would have to comply with existing environmental licensing, labor laws and sustainable management requirements.

Innovations.

93. The adoption of a performance-based tender mechanism was envisaged at the time of project design. Prior to its launch it was preceded by a request for an expression of interest (prequalification) process which was open to any legal entities (e.g., companies, consortia, research institutions etc.) and to all scales of charcoal producers. The results confirmed that there was interest among companies in adopting new charcoal production technologies. Payments were based on meeting results-based criteria as specified in the respective contracts. This was an innovative approach new for GOB, UNDP Brazil and the UN's procurement unit, the Joint Implementation Facility (JOF). In the Project it is now being replicated with small and medium-sized charcoal producers. It appears likely to be "mainstreamed" in relevant, future GOB and UNDP initiatives.

94. The shift to UNDP's Direct Implementation Modality (DIM) was a new approach for UNDP Brazil. It appears to have been quite effective resulting in an agile PMU staffed with competent and engaged staff. Most outcomes have or will likely be achieved before EOP. Stakeholders were satisfied with both project execution and the results achieved to date, albeit coming at the cost of obscuring who the "owner" and major stakeholder of the project was (GOB or UNDP).

95. Finally, there were the project supported technologies themselves. While many of these were identified in project design as already being under consideration by some of the partners, project resources were used to support further design work and field testing leading to commercial uptake. Five categories of technologies were supported under the Project. These were: (i) production of sustainable charcoal-installation or expansion of productive capacity with or without by-products; (ii) improvement of processes in the production of sustainable charcoal; (iii) burning of gases/smoke generated in the production of sustainable charcoal; (iv) adoption and/or expansion and/or improvement of technological arrangements involving the use of sustainable charcoal and/or by-products in the production of pig iron, steel and ferroalloys; and (v) recovery and / or processing of by-products of sustainable charcoal. The next challenge will be to disseminate these technologies further to achieve additional upscaling beyond the immediate project partners.

IV. Conclusions and Recommendations

A. Conclusions

96. Status at Time of MTR. The Mission found that significant progress has been made towards the achievement of both the project objective and most of the associated outcomes and both should be completed by EOP. All technological innovations supported under the tender mechanism are in execution and are presently being monitored. Initial results indicate that they are (or will) achieve GY targets and GHG emission reduction targets. Independent audits of the results are scheduled before the end of the year. The five business models have been evaluated and results will be available in August 2019. Results from the testing of UFV's conversion technology and associated demonstration units will be made available in September 2019. The policy and regulatory framework strategy, following public review and comment, is expected to be released by August of 2020. However, it is unlikely to be adopted by government before EOP. The outcome of US\$ 40 million of leveraged investment capital in support of more efficient charcoal production is highly unlikely to be met within the remaining time before project closure (see para. 100 below).

97. Co-financing. The effect of the financial crisis exacerbated by the dramatic decline in the price of oil and the congressional law calling for the diversification of oil royalty funds administered by BNDES and *FundoClima* in support climate change activities to other sectors, combined to contribute to a significant shortfall in counterpart resources in support of the Project at the time of the MTR. The PMU responded by opening lines of communication with other potential alternative sources of funding in particular BdoB and regional development banks but found there were few financing windows available to credit in particular to projects associated with plantation forests due to the long lead times (7 years) before seeing a return on investment. It must be said that the Project has been successful in obtaining cash co-financing from the large I&S partners. It also appears to have been successful in leveraging a not inconsiderable amount of co-financing (mostly in-kind) from several of the partners but has not been able to document these contributions. Finally, there was no evidence of significant adverse effects on project progress associated with reduced co-financing, in particular from the large I&S partners that invested their own resources.

98. PRODOC. Project design was well-written and presents a coherent argument to justify the project supported with a results framework that mostly had well thought-out SMART indicators. However, it was not clear on what that role was and what part the Project could play, in support, of the small and medium-sized charcoal producer in MG. There was little attempt to distinguish the large, integrated I&S producers, industries that have their own charcoal plantations, from the more numerous, but smaller pig-iron mills that depend on a highly dispersed and volatile group of charcoal producers. While data remain scarce this latter group is thought to represent approximately 70% - 80 % of all charcoal production in MG. It appears that at time of project design, a process that lasted some 39 months, given data scarcity, the project designers were not clear what the Project could do with respect to these potential stakeholders. The Project (PMU and partners) have overcome these barriers as by the time of the MTR sufficient interest and resources have been mobilized to support a new tender for this key target group of stakeholders.

99. PMU. The housing of the PMU staffed with GEF-funded consultants was an innovative approach to project implementation both for UNDP and GOB. The PMU proved to be particularly agile and was not burdened with time-consuming administrative procedures characteristic of working within large government bureaucracies. Conversely it did not present a burden on MMA in particular with respect to the need for offices, meeting rooms and telecommunications. This also appeared to facilitate communications with UNDP as well as many of the partners with the possible exception of MMA, the logical alternative for the housing of the PMU. This may have come at some cost of contributing to a perception that the Project was an UNDP project (as opposed to an MMA/GOB project) but no evidence was found that indicated this factor contributed to undermining progress toward achieving project objective/outcomes. Similarly, there was no evidence that housing the PMU outside a mainline agency (MLA) would impede the "mainstreaming" of project innovations (e.g., adoption of the tender mechanism in future public-supported initiatives). Finally, it was noted and confirmed by others during the mission that housing the PMU in UNDP may have had the added benefit of "diluting" ownership among public partners contributing to more flexible institutional arrangements due to shifting responsibilities for resolving any difficulties to the PMU (and indirectly UNDP) from the participating MLAs.

100. Adaptive Management. A more agile PMU staffed with competent highly motivated individuals appears to have been the project's good fortune serving to navigate the latter through a highly turbulent period ranging from Brazil's most severe recession in history to an impeachment of a president followed by one of the most polarized political campaigns in recent memory. These and other "events" adversely affected the Project including contributing to an absence of continuity in MG-public counterparts, loss of counterpart co-financing and creating an unfavorable environment to launch new policy initiatives. Nevertheless, there exists ample evidence that the PMU, supported by a sound project design and UNDP procedures and support, had sufficient "space" to meet and overcome many of these challenges as exemplified by creating a network of new institutional partners, resolving in part the co-financing issue and increasing the profile of the small and medium-sized charcoal producers over time in the Project culminating in their participation in the tender mechanism.

101. Tender Mechanism. The payment for performance tender mechanism appeared to be a highly innovative approach both for UNDP Brazil and GOB. Initially it appeared to have met with some skepticism among potential partners, in particular among the large I&S companies who were concerned about the potential loss of sensitive data with respect to their respective technological processes. One tool developed to meet this concern was the adoption of a two-step process beginning with a call for expressions of interest. This provided the time needed to filter out non-competitive or less than interested potential stakeholders from participation in the second round.

102. Partnerships. Perhaps the most successful result of the Project was the creation of a large and diverse network of stakeholders coming from Brasilia and MG's I&S and charcoal production sectors. The development of this network and underlying partnerships in part reflected the project's need to respond to increased government "fragility" and uncertainty (particularly in MG) associated with high staff-turnover resulting from the economic recession contributing to delays in paying salaries in the early years of the Project. In addition to the participation of the relevant federal ministries, mostly through their participation in the Project Advisory Committee (CAP), partners ranged from large I&S companies, to smaller, family-run producers of primary material and charcoal, NGOS, producer associations representing plantation forests and pig-iron producers and state-affiliated extension service providers to small producers. As a result, dialogue has increased among stakeholders and information exchanged; factors that there a growing "critical-mass" of stakeholders whose presence will serve to increase the the chances of the sustainability of project outcomes.

103. Risks. During the MTR an analysis of risks identified in the PRODOC indicated that most are likely to remain through EOP at the same or in some cases a reduced level of probability. There appeared to be "cautious optimism" that the new government may be moving slowly towards re-engaging with on-going initiatives in support of climate change in particular where there is a well-defined role for the private sector; this would clearly benefit the Project. Two new risks to project sustainability identified for the remaining period of the Project (absence of an enabling policy framework in MG and reduced replanting of forest plantation in the state).

104. Sustainability. Project objective and outcomes support a number of the SDGs, UNDP's CPD and Brazil's continued commitments to UNFCCC. At the project level, preliminary results stemming from the pilot technology activities supported under the Project, indicate that they have been successful in demonstrating that increased efficiencies are able to be achieved concurrent with contributing to improved socio-environmental conditions for small/medium charcoal producers. Nevertheless, the I&S sector is highly complex and there exist many conditions beyond the control of the Project that will determine whether these results can be scaled-up and prove sustainable (e.g., general economic conditions, price of mineral coke, exchange rate risk, rival demand from cellulose market, etc.). These factors, together with the policy environment will likely be the main factors determining whether project objective and outcome prove sustainable.

B. Recommendations

105. Policy Component. There is likely to be a framework strategy produced by a contracted firm towards end of project (August 2019). It is hoped that if successfully completed the framework strategy will not only integrate various policy elements (e.g., financial incentives, forest plantation policy in MG, MRV, etc.) but will have been agreed to buy Federal and MG State and private and relevant NGO and CSO stakeholders in the I&S and associated charcoal producer sectors. It is also expected that the final strategy will reflect public review following its posting on the relevant websites. However, it is unlikely to be "adopted" by Federal and/or MG governments in the remaining time before project closure . This runs the risk of producing a "paper"

strategy rather than achieving a more sustainable outcome. Other options include: (i) adjusting the target to reflect the existing situation at the time of the MTR and (ii) “diluting” the strategy by removing the more contentious aspects to facilitate adoption. The third, recommended option, is to redouble efforts, applying additional time (paras. 108), resources (para. 109) and the CAP together with other influential partners in the Project to see if a more permanent outcome can be achieved.

106. Co-financing. It is clear that as a project objective indicator the co-financing target will not be reached. Moreover, significant progress has been made to close the gap based largely on the cash and in-kind contributions of the participating I&S companies and the small/medium charcoal producing companies. Nevertheless, there is considerable evidence that many of the contributions of the partners are not being documented. The PMU should make an attempt to make estimates of project co-financing, not so much to attempt to meet (the unlikely) target, but to be able to show the level of interest among project stakeholders at the time of the TE.

107. METT. At the time of CEO Endorsement under Objectives 2 Energy Efficiency and Objective 3 Renewable Energy, project proponents projected reaching the following would be achieved by EOP: (i) policy/regulatory strategy adopted and enforced (5); (ii) establishment of financial facilities (e.g., credit lines) would be operationalized / funded and have sufficient demand (5); and (iii) institutional/human capacity utilized and sustained (5). At the time of the MTR, with the exception of capacity building target which was rated 3 (training delivered), all remaining categories were rated 1 with the exception of establishment of financial facilities in support of EE. Ratings at time of CEO Endorsement appear to be highly unrealistic, particularly for those targets that do not have an *a priori* baseline (i.e., it is very difficult to go from no policy to an adopted and enforced policy in 5 years). These EOP projections should be reviewed and revised accordingly.

108. Revision/clarification of Results Framework Targets. A review of the Project Results Framework at the time of the MTR with PMU indicated the following need to be revised/clarified: (i) PO indicator on policy regulatory framework; (ii) PO target for investment capital leveraged (US\$ 40 million is not realistic); (iii) elimination of the PO target of indirect GHG emission reductions of 700 kton/yr (CCM-2); 200 kton/yr (CCM-3) due to lack of specification of the methodology used to calculate these numbers in the PRODOC; (iv) Output 1.1 on “detailed strategy adopted” by MG government; and (v) Output 1.4, it is unlikely that the Project will be able to “put in place” financial incentives. Failure to do so will just postpone the problem until the TE;

109. Confirmation of Project Closure Date. The project start date as defined by the PRODOC signature date was June 2015. For the 5 year Project this needed to be reconciled with initial planned project’s closing date (December 2019) as it resulted in a 6 month short-fall. An adjustment for the 6 month differential resulting in a new closure date of June 2020 was requested from UNDP. This was accepted and executed in May 2019.

110. Project Extension. The Mission found that the Project will likely achieve an MMA-approved national strategic framework in support of sustainable charcoal in place by June 2020. However, for reasons detailed elsewhere in this report it is not feasible to expect government “adoption” through a congressional approval national law (or even a state law) by EOP. In light of the importance of the policy component to the success of the Project the Mission strongly recommends consideration be given to approving a one year extension (June 2020 – May 2021). While even with a one-year extension the Project to see the approval of substantial legislation it could contribute to policy change in MMA and its counterpart national and state agencies. This recommendation is based on the following factors: (i) MMA commitment to approve and promote the new policy framework; (ii) evidence of increased openness within national government to support CC-friendly policies; (iii) existing “buy-in” to support the new framework through a broad group of stakeholders including the existing (influential) partners that contributed to its formulation; and (iv) new opportunities that have developed late in the Project that if consolidated, could lead to increased project impact (e.g., growing participation in and support from independent charcoal producers). If the extension were to be granted it is recommended that a “mini-inception” workshop be supported shortly thereafter to finalize a work program, budget, strategy, indicators and targets to maximize the adoption and implementation of elements of the policy.

111. Use of Excess Project Funds. Due to the exchange US\$:R\$ rate favouring the project there exists an estimated surplus of US\$ 1.3 million. There is no shortage of good ideas how to use it (pilot activities linked to small/medium charcoal producer tender recipients such as charcoal certification, micro-electricity co-generation, expanding UD to additional biomes, incorporating on-farm charcoal production into

integrated farming plans). A priority should the extension be granted (see para. 110 above), should be to promote the adoption (and implementation if possible) of recommendations supported by the MMA approved national charcoal strategy. Regardless of the final decision it should be linked organically to what came before under the Project and serve as a “bridge” supporting the “next step.” The Team may also want to consider using some of these resources to identify additional finance in particular to carry-through the policy outcome (e.g. through preparation of a PIF/PPG for a GEF Medium-sized Project).

List of Annexes

Annex A.	MTR ToR
Annex B.	MTR evaluative matrix
Annex C.	Example Questionnaire or Interview Guide used for data collection
Annex D.	Ratings Scales
Annex E.	MTR mission itinerary
Annex F.	List of persons interviewed
Annex G.	List of documents reviewed
Annex H.	Co-financing table
Annex I.	Signed UNEG Code of Conduct form
Annex J.	Signed MTR final report clearance form
Annex K.	Audit trail from received comments on draft MTR report
Annex L.	Relevant midterm tracking tools
Annex M.	Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)
Annex N.	Project Time-line
Annex O.	Supplementary Data Tables
Annex P.	Project Photos

Annex A. UNDP-GEF Midterm Review Terms of Reference (TORs)

INTERNATIONAL IC CONSULTANT UNDP BRAZIL

GEF Mid Term Review

BRA/14/G31

1. INTRODUCTION

This is the Terms of Reference (ToR) for the UNDP-GEF Midterm Review (MTR) of the full- sized project titled “*Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil*” implemented through the UNDP and the Ministry of Environment, which is to be undertaken in 2019. The project started on the *June 12th, 2015* and is in its *third* year of implementation. This ToR sets out the expectations for this MTR. The MTR process must follow the guidance outlined in the document *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* (attached¹⁸).

2. PROJECT BACKGROUND INFORMATION

The objective of the Project “*Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil*” is: to reduce the greenhouse gas emissions from the iron and steel sector in the Brazilian State of Minas Gerais, by (i) developing and demonstrating enhanced, clean conversion technologies for renewable, biomass-based charcoal production, and (ii) implementing an effective, supportive policy framework.

The proposed Project is targeted at addressing the identified barriers that currently impede the clean and efficient conversion of (renewable) biomass resources to charcoal for the iron and steel sector in Brazil. The Project promotes the availability of sustainable, renewable biomass- based charcoal, produced efficiently and at a competitive cost level compared to mineral coke. The budget of the project is US\$ 43,950,000, of which US\$ 7,150,000 is provided as a grant under GEF CCM-2 and CCM-3, and US\$ 36,800,000 is provided as co-financing by the national Government, private sector and universities, and by UNDP CO in Brazil.

The Project focuses on reducing the technology barrier as the sector lacks the specific knowledge to develop efficient charcoal conversion plants and implement them as a rational business. In addition, the more advanced iron and steel companies were invited to invest in efficient charcoal conversion facilities by offering a financial incentive through a dedicated bidding procedure, and by facilitating project design and implementation through specialized technical assistance. The bidding process capitalizes on the progress made by private companies on clean charcoal production since 2009. The financial benefits for participants will offset the higher perceived risks related to early-market introduction and provide an acceptable rate

77. ¹⁸ Also available at: <http://web.undp.org/evaluation/guidance.shtml#gef>.

on return for investors. The bidding process implies a change in approach compared to the PIF, which foresaw the Project taking the lead in the technology development process. The expected benefits of the bidding process include: (i) ability to foster and demonstrate several technologies and business contexts; (ii) market-pull approach rather than technology push; and (iii) greater cost-effectiveness. The new approach also avoids potential issues related to intellectual property, which turned out to be relevant.

Work in the field of policy and regulation pursues expanding the existing framework (which is primarily restrictive by banning non-renewable charcoal) by establishing positive incentives for renewable, clean and resource-efficient charcoal production, and by facilitating implementation of advanced charcoal production facilities in Minas Gerais. In the end-of-project situation, I&S companies are expected to have readily access to information and technology, thereby supported by favorable regulation and incentives to foster investment in charcoal conversion. While some companies have embarked on an internal technology development programme, others may opt to acquire access to technology under appropriate intellectual property arrangements (such as licenses). The Project will pursue its objective through the following components:

- I. Information and policy development.
- II. Strengthening of technological development and human capacity.
- III. Investment and performance monitoring.

The scope of the Project consists in (i) bringing together government actors, industries, sector stakeholders and research institutes; (ii) constructing a clear path towards market transformation by policy development in Minas Gerais; (iii) providing assistance for technological development; and (iv) implement a first batch of commercial, advanced charcoal production facilities by providing specific financial incentives for the use of renewable charcoal.

3. OBJECTIVES OF THE MTR

The MTR will assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results. The MTR will also review the project's strategy and its risks to sustainability.

4. MTR APPROACH & METHODOLOGY

The MTR must provide evidence-based information that is credible, reliable and useful. The MTR team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the Project Document, project reports including Annual Project Review/PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based review). The MTR team will

review the baseline GEF focal area Tracking Tool submitted to the GEF at CEO endorsement, and the midterm GEF focal area Tracking Tool that must be completed before the MTR field mission begins.

The MTR team is expected to follow a collaborative and participatory approach² ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), the UNDP Country Office(s), UNDP-GEF Regional Technical Advisers, and other key stakeholders.

Engagement of stakeholders is vital to a successful MTR. ³ Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to the Ministry of Environment, Ministry of Sciences, Technology, Innovations and Communications, Ministry of Agriculture, Ministry of Economy and the Minas Gerais Government; executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, Project Board, project stakeholders, academia, local government and CSOs, etc. Additionally, the MTR team is expected to conduct field missions to the state of Minas Gerais including the following project sites: Belo Horizonte (interview with local stakeholders, such as Sebrae, FAEMG, FIEMG, Silviminhas and/or Emater – Minas Gerais Government), Viçosa (interview with partner university - UFV), Lamim (demonstration unit- charcoal production) Jeceaba (enterprise supported by the project - fuel substitution) and Curvelo (enterprise supported by the project - charcoal production).

The final MTR report should describe the full MTR approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the review.

5. DETAILED SCOPE OF THE MTR

The MTR team will assess the following four categories of project progress. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*⁴ for extended descriptions.

i. Project Strategy

Project design:

- Review the problem addressed by the project and the underlying assumptions. Review the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document.
- Review the relevance of the project strategy and assess whether it provides the most effective route towards expected/intended results. Were lessons from other relevant projects properly incorporated into the project design?
- Review how the project addresses country priorities. Review country ownership. Was the project concept in line with the national sector development priorities and plans of the country (or of participating countries in the case of multi-country projects)?

Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those

who could contribute information or other resources to the process, taken into account during project design processes?

- Review the extent to which relevant gender issues were raised in the project design. See Annex 9 of *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines.
- If there are major areas of concern, recommend areas for improvement.

Results Framework/Logframe:

- Undertake a critical analysis of the project's logframe indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary.
- Are the project's objectives and outcomes or components clear, practical, and feasible within its time frame?
- Examine if progress so far has led to or could in the future catalyze beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
- Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART 'development' indicators, including sex- disaggregated indicators and indicators that capture development benefits.

² For ideas on innovative and participatory Monitoring and Evaluation strategies and techniques, see [UNDP Discussion Paper: Innovations in Monitoring & Evaluating Results](#), 05 Nov 2013.

³ For more stakeholder engagement in the M&E process, see the [UNDP Handbook on Planning, Monitoring and Evaluating for Development Results](#), Chapter 3, pg. 93.

⁴ Available at: <http://web.undp.org/evaluation/guidance.shtml#gef>.

ii. Progress Towards Results

Progress Towards Outcomes Analysis:

- Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*; colour code progress in a "traffic light system" based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as "Not on target to be achieved" (red).

Table. Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

Project Strategy	Indicators	Baseline Level ⁶	Level in 1 st PIR (self-reported)	Midterm Target ⁷	End-of-project Target	Midterm Level & Assessments	Achievement Rating ⁹	Justification for Rating
Objective:	Indicator (if applicable):							
Outcome 1:	Indicator 1:							
	Indicator 2:							
Outcome 2:	Indicator 3:							

-
- ⁵ Populate with data from the Logframe and scorecards
 - ⁶ Populate with data from the Project Document
 - ⁷ If available
 - ⁸ Colour code this column only
 - ⁹ Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

	Indicator 4:						
	Etc.						
Etc.							

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved
-----------------	----------------------------------	-----------------------------------

In addition to the progress towards outcomes analysis:

- Compare and analyse the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review.
- Identify remaining barriers to achieving the project objective in the remainder of the project.
- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.
-

Project Strategy	Indicator	Baseline Level	Level in 1 st PIR (self-reported)	End-of-project Target	Midterm Level & Assessment10	Achievement Rating	Justification for Rating
Objective	Number of commercially demonstrated efficient charcoal conversion technologies	at least three (3) technological concepts under development by private firms no (0) commercial demonstration (as of 2013)		At least three (3) charcoal production plants in commercial operation; at least three (3) successful business models; at least one (1) proven conversion technology			
	Average gravimetric yield implemented technologies	25% for small producers (hot-tail) 29% for industrial (brick kiln)		32 % or better			
	Policy and regulatory framework (for renewable charcoal use in Minas Gerais)	1 (no strategy in place)		4 (strategy adopted)			
	GHG emissions reductions (Mton CO ₂ eq)	0		Direct: 432 kton (CCM-2) indirect: 700 kton/yr (CCM-2); 200 kton/yr (CCM-3)			
	Investment capital leveraged for efficient charcoal production	0		7			
Outcome 1	Renewable charcoal strategy in MG	No strategy to stimulate charcoal technology development (0)		Detailed strategy designed and adopted by MG State Government			

	MRV system for charcoal production and GHG benefits for I&S sector agents	No system in place (0)		MRV system implemented and operational			
	Acceptable methodologies and criteria to assess charcoal production chains	No acceptable methodology in place (0)		Acceptable methodologies in place to perform qualitative evaluations/assessments (1)			
	Financial incentives for (a) use of renewable charcoal by I&S sector in MG; (b) investment in efficient, clean charcoal production chains	(a) No incentives for renewable charcoal use (0); (b) No incentives for investment in efficient clean charcoal production chains (0)		(a) Incentives for renewable charcoal use in place (1); (b) Incentives in place for investment in efficient, clean charcoal production chains (1)			
Outcome 2	Charcoal technology test program carried out	Isolated technology development efforts with low sector coordination level (0)		Concerted charcoal technology development program executed (1)			
	By-products utilization technology program carried out	Isolated private initiatives to develop technologies for utilization of charcoal by-products (0)		Concerted by-products technology program carried out (1)			
	(a) Number of developed business models; (b) number of expressions of interest (EoI) from local charcoal producers; (c) seminar/workshop on efficient charcoal production chains	(a) Some business models conceived but not commercially proven yet (0); (b) No (0) EOIs; (c) No (0) seminars held		(a) At least four (4) different business models developed and accepted by charcoal producers; (b) At least six (6) EOIs signed; (c) One (1) seminar held			
	(a) training programs implemented			(a) Training material developed (1); At least three (3) training programs being executed			
Outcome 3	Tender mechanism negotiated and formalized	Proposal for tender mechanism prepared by MMA (0)		Tender mechanism negotiated and formalized (1)			

	Consultancies to support project development	No (0) consultancies		At least three efficient charcoal conversion facilities are ready for the investment phase of the program			
	(a) Number of efficient, clean charcoal production facilities in place; (b) Charcoal production per plant (tons/yr); (c) Wood-charcoal conversion rate per plant (%); (d) GHG emission reductions per plant (tons CO ₂ eq/yr)	(a) No (0) facilities in place; (b) No production (0 tons/yr); (c) baseline technology conversion rates are 25 – 30 %; (d) No emission reductions (0 ton CO ₂ eq/yr).		(a) At least three (3) commercial facilities procured and operating including one small-scale (under 1,000 tons); (b) 80,000 tons charcoal produced per year; (c) at least 33% conversion rate (weighted average); (d) 21,6 kton CO ₂ eq/yr			
	(a) Documents and presentations with best practices; (b) international event to disseminate clean charcoal production	(a) No document (0); No event (0)		(a) Documents and presentation compiled (1); (b) International event held (1).			

¹⁰ Colour code this column only

¹¹ Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

Indicator and rating (from 0 to 5) according to GEF Tracking Tool for CCM Objective 3 (Renewable Energy). A ban on the use of non-renewable charcoal is in place in MG (forestry law No. 18.365/09)

iii. Project Implementation and Adaptive Management

Management Arrangements:

Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.

Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement.

Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.

Work Planning:

- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
- Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?
- Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start.

Finance and co-finance:

- Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
- Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
- Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
- Informed by the co-financing monitoring table to be filled out, provide commentary on co- financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

Project-level Monitoring and Evaluation Systems:

- Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
- Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?

Stakeholder Engagement:

- Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
- Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
- Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

Reporting:

- Assess how adaptive management changes have been reported by the project management and shared with the Project Board.
- Assess how well the Project Team and partners undertake and fulfill GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)
- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Communications:

- Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability

of project results?

- Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)
- For reporting purposes, write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.

iv. Sustainability

- Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
- In addition, assess the following risks to sustainability:

Financial risks to sustainability:

- What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project's outcomes)?

Socio-economic risks to sustainability:

- Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained?
- Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?

Institutional Framework and Governance risks to sustainability:

- Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Environmental risks to sustainability:

- Are there any environmental risks that may jeopardize sustenance of project outcomes?

iii. Conclusions & Recommendations

The MTR team will include a section of the report setting out the MTR's evidence-based conclusions, in light of the findings.¹⁴

Recommendations should be succinct suggestions for critical intervention that are specific, measurable, achievable, and relevant. A recommendation table should be put in the report's executive summary. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF- Financed Projects* for guidance on a recommendation table.

The MTR team should make no more than 15 recommendations total.

iv. Ratings

The MTR team will include its ratings of the project's results and brief descriptions of the associated achievements in an *MTR Ratings & Achievement Summary Table* in the Executive Summary of the MTR report. See Annex E for ratings scales. No rating on Project Strategy and no overall project rating is required.

Table. MTR Ratings & Achievement Summary Table for *Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil*

Measure	MTR Rating	Achievement Description
Project Strategy	N/A	
Progress Towards Results	Objective Achievement Rating: (rate 6 pt. scale)	
	Outcome 1 Achievement Rating: (rate 6 pt. scale)	
	Outcome 2 Achievement Rating: (rate 6 pt. scale)	
	Outcome 3 Achievement Rating: (rate 6 pt. scale)	
	Etc.	
Project Implementation & Adaptive Management	(rate 6 pt. scale)	
Sustainability	(rate 4 pt. scale)	

6. TIMEFRAME

¹⁴ Alternatively, MTR conclusions may be integrated into the body of the report.

The total duration of the MTR will be approximately 30 working days over a time period of 15 weeks and shall not exceed five months from when the consultant(s) are hired. The tentative MTR timeframe is as follows:

ACTIVITY	NUMBER OF WORKING DAYS	COMPLETION DATE
Document review and preparing MTR Inception Report (MTR Inception Report due no later than 2 weeks before the MTR mission)	5 days	May 31 st , 2019
MTR mission: stakeholder meetings, interviews, field visits	10 days	June 20 th , 2019
Presentation of initial findings- last day of the MTR mission	1 day	June 21 st , 2019
Preparing draft report (due within 3 weeks of the MTR mission)	10 days	July 12 th , 2019

Finalization of MTR report/ Incorporating audit trail from feedback on draft report (due within 1 week of receiving UNDP comments on the draft)	5 days	August 23 rd , 2019
---	--------	--------------------------------

Options for site visits should be provided in the Inception Report.

7. MIDTERM REVIEW DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	MTR Inception Report	MTR team clarifies objectives and methods of Midterm Review	No later than 2 weeks before the MTR mission	MTR team submits to the Commissioning Unit and project management
2	Presentation	Initial Findings	End of MTR mission	MTR Team presents to project management and the Commissioning Unit
3	Draft Final Report	Full report (using guidelines on content outlined in Annex B) with annexes	Within 3 weeks of the MTR mission	Sent to the Commissioning Unit, reviewed by RTA, Project Coordinating Unit, GEF OFP
4	Final Report*	Revised report with audit trail detailing how all received comments have (and have not) been addressed in the final MTR report	Within 1 week of receiving UNDP comments on draft	Sent to the Commissioning Unit

*The final MTR report must be in English. If applicable, the Commissioning Unit may choose to arrange for translation of the report into a language more widely shared by national stakeholders.

8. MTR ARRANGEMENTS

The principal responsibility for managing this MTR resides with the Commissioning Unit. The Commissioning Unit for this project's MTR is *UNDP Country Office in Brazil*.

The commissioning unit will contract the consultants and ensure the timely provision of per diems and travel arrangements within the country for the MTR team. The Project Team will be responsible for liaising with the MTR team to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

All related travel expenses will be covered by the Project and should not be included in the candidate's financial proposal.

9. TEAM COMPOSITION

One independent consultant will conduct the MTR with experience and exposure to projects and evaluations.

The consultant should not have a conflict of interest with project's related activities.

10. PAYMENT MODALITIES AND SPECIFICATIONS

10% upon submission and approval of the inception Report. 30% upon submission and approval of the draft MTR Report. 60% upon finalization and approval of the MTR Report.

11. APPLICATION PROCESS

Individual consultants are invited to submit applications together with their CV for this process. The application should contain a current and complete CV in English with indication of the e-mail and phone contact, as well as a price offer (in US Dollars) indicating the total cost of the assignment.

The CV and the proposed price must be submitted in separate files. Noncompliance with this provision will cause the application to be disregarded.

Financial proposals must include only professional fees. Travel costs (air/land tickets, travel insurance) and living allowances will be provided by the project.

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply.

The consultant shall have prior experience in evaluating similar projects. Experience with GEF financed projects is an advantage. The evaluator selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities.

The consultant must present the following qualifications:

Mandatory criteria:

- Minimum 10 years of relevant professional experience (project management, monitoring and evaluation; climate change; GEF etc.);
- Previous experience with results-based monitoring and evaluation methodologies;
- Technical knowledge in the targeted focal area(s);
- Fluency in English with excellent writing skills.

Qualifying criteria:

- Education in related areas of the TOR;
- ☐ Experience on international projects (preparation, elaboration, management, review etc.);
- Experience on international projects evaluation and/or review in general, except GEF funded projects;
- Experience on GEF evaluations;
- Experience on publications, technical reports, studies, projects and/or interventions related to climate change mitigation and/or energy (renewable energy, energy efficiency);
- Experience working in Latin America;
- Excellent communication skills;
- Demonstrable analytical skills;
- Knowledge of Portuguese.

EVALUATION PROCEDURE

The final criteria for this selection process will be **technical capacity** and **price**.

Individual consultants will be evaluated based on a cumulative analysis taking into consideration the combination of the applicants' qualifications and financial proposal. The award of the contract shall be made to the individual **consultant whose offer has been evaluated and determined as:**

i. Classification of technical qualification (cv)

The maximum score in TECHNICAL QUALIFICATION is 100 points.

Analysis of the CV regarding compliance with the mandatory requirements specified in these Terms of Reference. Candidates who do not meet the minimum mandatory criteria described herein will be disqualified at this stage.

CRITERIA	SCORE	WEIGHT	MAXIMUM SCORE
Education in related areas of the TOR			
Doctorate: 05 points; Master: 04 points; Specialization: 03 points; Graduation: 02 points; Training courses in general: 01 point; No education: 0 point.	0 to 5	1	5 points
Experience			
Experience on international projects (preparation, elaboration, management, review) 01 point per experience, up to 05 points; No experience: 0 point.	0 to 5	1	5 points
Experience on international projects evaluation and/or review in general, except GEF funded projects 01 point per evaluation report; No experience: 0 point.	0 to 5	4	20 points
Experience on GEF evaluations			

01 point per evaluation report, up to 05 points; No experience: 0 point.	0 to 5	4	20 points
Experience on publications, technical reports, studies, projects and/or interventions related to climate change mitigation and/or energy (renewable energy, energy efficiency) 01 point per experience, up to 05 points; No experience: 0 point.	0 to 5	3	15 points
Experience working in Latin America 04 years or more: 05 points; Less than 04 years: 03 points; Less than 2 years: 01 point	0 to 5	1	5 points
Interview			
- Expertise on project evaluation methodologies and tools; - Knowledge of GEF evaluations objectives, rules and procedures; - Understanding of issues related to climate change and/or energy; - Analytical and communication skills. - Working knowledge of Portuguese.	0 to 5	6	30 points
Total			100

* The score in the interview will be assessed in accordance to the following:

- 5 points - Excellent
- 4 points – Very good
- 3 points - Good
- 2 points - Acceptable
- 1 point - Inferior
- 0 point - Insufficient

ii. Classification of financial proposals (price) – FINAL

Only the financial proposals (price) of candidates who attain **a final Score of 70 points or higher in the TECHNICAL CLASSIFICATION** will be taken into consideration.

The Final Score—FS—of the process will be reached by the sum of the **final Technical Score—TS multiplied by a factor of 0.70**, and the **Price Proposal score—PS—multiplied by a factor 0.30**, i.e.:

$$FS = TS \times 0.70 + PS \times 0.30$$

The **PS** score will be calculated according to the following formula:

$$PS = 100 \times LPP / Ppe$$

Where:

PS = score of the price proposal LPP = lowest price proposal

Ppe = price proposal under evaluation

The lowest price proposal will score one hundred (100).

The proposal achieving the highest final score will be selected.”

Annex B. Midterm Review Evaluative Matrix Template

Evaluative Questions	Indicators	Sources	Methodology
Project Strategy: To what extent is the project strategy relevant to country priorities, country ownership, and the best route towards expected results?			
- what are current government policies in support of sustainable charcoal production in the I&S sector for purposes of GHG emission reduction and meeting national CC targets?	- status and commitments under existing national and state (MG) policy framework	- national and state laws, policies and plans	- review of relevant laws, policies and plans
- what incentives are provided to the I&S sector to encourage use of sustainable charcoal (and/or disincentives that exist that discourage same)?	- existing public policies/ programs that affect use of sustainable charcoal	- availability and access to bank lending and/or tax policies	- interviews and review of relevant tax policies
- how does UNDP support GOB priorities in CC?	- degree existing UNDP development framework supports Brazil's CC priorities	UNDP staff CDF	- interview - review
- is the composition and network of project partners likely to result in a successful approach to achieve the objective/outcomes?	- number of sub-sectors represented by partners and associated actions leading to advance of the project	- MOUs, LOAs, - participation in project-related meetings (PSC, technical ad hoc)	- interviews and review and assess products and minutes of meetings
Progress Towards Results: To what extent have the expected outcomes and objectives of the project been achieved thus far?			
- were the objectives /outcomes realistic?	- overall subjective observations - progress described at time of MTR	- project staff; project partners - PIRs	- interviews - review
- what evidence exists to demonstrate progress?	- overall subjective observations - progress against MOAs, LOAs - "on-the ground" investments	- project staff/partners - written products - infrastructure	interviews reviews site visits
- were there any unexpected results?	- observations - identification/description	- project staff - PIRs	- interviews - review
- were PRODOC risks /assumptions correct? If so, were proposed mitigative measures applied? Were they effective?	- 3 rd party documentation of risks - overall subjective observations - impediments to progress described at time of MTR - decisions taken in PSC meetings to adjust project activities to mitigate risks	- documented records of major events affecting Brazil since PRODOC - project staff; project partners - PIRs - PSC minutes	- review and assess - interviews - review - review and assessment

Project Implementation and Adaptive Management: Has the project been implemented efficiently, cost-effectively, and been able to adapt to any changing conditions thus far? To what extent are project-level monitoring and evaluation systems, reporting, and project communications supporting the project's implementation?			
- has project been implemented smoothly? - how could it have been done better?	- delays and sources in project implementation - changes in staff - need for budget reallocations	- project staff & partners - project staff & partners - meeting minutes of TPC/PSC	interviews interviews read and assess
- how did project team adjust project implementation to mitigate effects of government changes, economic crisis, currency fluctuations and other externalities?	- proposed and approved changes documented in the minutes of PSC meetings	- PSC meeting minutes	reading and analysis
- what progress has been described/quantified?	- descriptions available from PIR 3 +	- PIR 3+	data analysis
- describe what/when activities supported over 1 st half of project?	- number, types and schedule of activities and respective budgets	- AWP	data analysis
- what changes from PRODOC were required?	- reallocation of budget	- budget amendments	data analysis
- what was nature and periodicity of meetings supported under the project?	events that triggered <i>ad hoc</i> meetings not scheduled as part of regular schedule	- minutes of meetings	reading
Sustainability: To what extent are there financial, institutional, socio-economic, and/or environmental risks to sustaining long-term project results?			
- likelihood private sector will continue to transform through adoption of higher, more efficient I&S charcoal based production	- on-going and future declared investments to support the production process	- project staff - project partners - collaborative ministries - I&S associations	- interviews - interviews - interviews - reading
- likelihood enabling policies will be put (by EOP) and stay in place	- type and nature of existing and projected legal commitments	- national and state laws and policies	- review and analysis
- are adequate environmental and social safeguards in place at federal and state (MG) levels to mitigate adverse impacts associated with upscaling charcoal production technology and accompanying demand for Eucalyptus?	- federal and state "safeguard" laws and policies - capacity to implement relevant laws and policies - UNDP and GEF requirements	- national and state laws and policies - project staff /partners - established policies and requirements	- reviews - interviews - reviews

Annex C. Example Questionnaire or Interview Guide used for Data Collection

Project Strategy

- were the project objective/outcomes realistic in particular in the development and implementation of an effective supportive policy framework in support of sustainable carbon production)?
- were (and are) project objectives responsive to Minas Gerais (and Brazil's) needs in the I&S sector?
- were components realistic ref. project objectives, capacity of EA, funding, timeframe etc.?
- to what degree were lessons learned from other projects used in present design (e.g., Plantar)?
- are their concerns over existing/future private sector commitment to charcoal production in the I&S sector?
- was the PRODOC risk assessment relevant and proposed respective mitigation measures effective for the period leading up to the MTR? and
- why was project design so novel for Brazil

Progress Towards Results

- how best to complete a quantitative assessment of progress towards achieving project outcomes and objectives given lack of targets in project's Logframe at time of MTR? and
- given achievement of progress to date will project objective be achieved, and if so, within the timeframe stated in the PRODOC (extension needed)?
- how did the following factors affect progress towards results (change in government/personnel, economic crisis, loss of co-financing, currency fluctuation, other)?

Project Implementation and Adaptive Management

- did changes to PIF create delays to project formulation/approval?
- what did UNDP do to ensure quality at entry?
- how did UNDP support implementation through supervision and follow-up (in particular adjusting to change in governments, economic crisis, currency fluctuations and loss of primary co-financiers to the project)?
- What could UNDP have done better to increase efficiency and impact of the project during the first half of implementation?
- what could federal and MG governments done better to improve performance in first half of project?
- were gender aspects addressed adequately in the first half of project implementation?
- were there any un-intended outcomes / impacts in the first half of the project? If so what were they?
- describe how the M&E system was used to support project implementation?
- how has the project addressed environmental and social safeguards and stakeholder engagement? Has it been effective?
- was the network of partners developed in the first half of the project effective in supporting project implementation? If so, give examples? and
- any evidence to date that use of renewable charcoal is offsetting use of mineral cokes for pig iron production?

Sustainability

- what is the relevance of project experiences and lessons learned to date from MG to other States in Brazil (e.g., Maranhão and Pará)?
- what is the likelihood that some changes may occur that are detrimental to the ultimate achievement of the operation's development outcome (please describe)?
- more specifically, how would and what is the likelihood of the following externalities adversely

affecting the sustainability of outcomes (price of coke, demand in export markets for Brazilian I&S, status of Brazil's economy)? What recommendations to mitigate these factors and demand for sustainable charcoal.

- What are the main socio-economic risks associated with growth in the sector/demand for sustainable charcoal and how best to mitigate them?

Other Issues to be discussed:

- what was fate of MG forestry law 18.365/09 in 2018 phasing out non-renewable charcoal in the I&S industry?
- why has the sustainable charcoal plan taken so long to be prepared?
- what happened to the creation of the Charcoal Technical Commission?
- is there a need for reallocation of funds for different CC related investments at time of MTR? If so what are they and what are the cost ramifications?
- will there be a need to request a project extension?
- Are the METT targets set at time of the PRODOD for EOP realistic?

Annex D: MTR Ratings

Ratings for Progress Towards Results: (one rating for each outcome and for the objective)		
6	Highly Satisfactory (HS)	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as “good practice”.
5	Satisfactory (S)	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
4	Moderately Satisfactory (MS)	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
3	Moderately Unsatisfactory (HU)	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
2	Unsatisfactory (U)	The objective/outcome is expected not to achieve most of its end-of-project targets.
1	Highly Unsatisfactory (HU)	The objective/outcome has failed to achieve its midterm targets and is not expected to achieve any of its end-of-project targets.

Ratings for Project Implementation & Adaptive Management: (one overall rating)		
6	Highly Satisfactory (HS)	Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as “good practice”.
5	Satisfactory (S)	Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
4	Moderately Satisfactory (MS)	Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
3	Moderately Unsatisfactory (MU)	Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
2	Unsatisfactory (U)	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
1	Highly Unsatisfactory (HU)	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Ratings for Sustainability: (one overall rating)		
4	Likely (L)	Negligible risks to sustainability, with key outcomes on track to be achieved by the project’s closure and expected to continue into the foreseeable future
3	Moderately Likely (ML)	Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
2	Moderately Unlikely (MU)	Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
1	Unlikely (U)	Severe risks that project outcomes as well as key outputs will not be sustained

Annex E. Mission Itinerary

The following field visits were completed over the period 15 July – 26 July, 2019.

Date	Place
Monday 15.07.19	Arrive in Brasilia
Tuesday 16.07.19	Meetings in Brasilia
Wednesday 17.07.19	Meetings in Brasilia
Thursday 18.07.19 (morning) (afternoon)	Travel to Belo Horizonte, MG (air) Meetings in Belo Horizonte, MG
Friday 19.07.19	Meetings in Belo Horizonte, MG
Saturday 20.07.19	Work in hotel in Belo Horizonte, MG
Sunday 21.07.19 (morning) (afternoon)	Work in hotel in Belo Horizonte, MG Travel to Curvelo (car)
Monday 22.07.19 (morning) (afternoon)	Meetings in Curvelo Return to Belo Horizonte (car)
Tuesday 23.07.19 (morning) (afternoon) (afternoon)	Travel to Jeceaba (car) Meetings in Jeceaba Travel to Conselheiro Lafayete
Wednesday 24.07.19 (morning) (morning) (afternoon)	Travel to Lamim (car) Meetings in Lamim Return to Belo Horizonte (car)
Thursday 25.07.19 (morning) (afternoon)	Return to Brasilia (air) Work in hotel
Friday 26.07.19 (morning) (afternoon)	Team briefing Depart Brasilia

Annex F. List of Persons Interviewed

The following individuals were consulted, and field visits completed over the period 15 July – 26 July 2019.

	Pre-mission	
Date	Place/Mode	List of Participants
Tuesday 4.06.19		
1630 – 1730	Skype	Saenandoah Tiradentes Dutra, Acting Project Manager (UNDP), Monica de Oliveira, Technical Advisor (UNDP), Claudia Camara, Technical Analyst, UNDP, Michelle de Rezende Souza, Project Assistant, (UNDP) and Matheus Valerio Fontenelle Mesquita, Project Assistant, (UNDP)
Tuesday 25.06.19		
	Skype	Rosenely Diegues, CO Focal Point (UNDP) and Saenandoah Tiradentes Dutra, Acting Project Manager (UNDP)
Monday 15.07.19	Arrive Brasilia	
	Mission	
Tuesday 16.07.19	Brasilia	
morning	UNDP UN House – Sergio Vieira de Mello Complex	Saenandoah Tiradentes Dutra, Acting Project Manager (UNDP), Monica de Oliveira, Technical Advisor (UNDP) and Matheus Valerio Fontenelle Mesquita, Project Assistant, (UNDP)
afternoon	UNDP UN House – Sergio Vieira de Mello Complex	Adriano Santiago, Project Director (MMA) and Alessandra Silva (MMA)
Wednesday 17.07.19	Brasilia	
morning	UNDP UN House – Sergio Vieira de Mello Complex	CAP-Gustavo Henrique (MAPA), Joao Pignataro, technical consultant (MOE), Adriano Santiago & Project Director (MMA)
afternoon	UNDP UN House – Sergio Vieira de Mello Complex	Skype meeting with Marcos Bastos Planello, Coordinator, Forest Certification & Roberto Scorsatto Sartori, consultant (IMAFLORA) Gustavo Ramos, acting coordinator, GC of Strategies and Business (MCTIC)
Thursday 18.07.19	Belo Horizonte, MG	
Travel to Belo Horizonte, MG (morning)		
afternoon	Technical Assistance and Rural Extension Company EMATER)	Thiago Emmanuel Almeida, technical assessor crops, Sérgio Brás Regina, technical soordinator of crops & João Carlos Guimarães State Technical Coordinator of Irrigation
Friday 19.07.19	Belo Horizonte, MG	
morning	Brazilian Service to Support Micro and Small Enterprises (SEBRAE) and Federation of Agriculture and Livestock of the State of Minas Gerais (FAEMG)	Fabiana Vilela, technical analyst (SEBRAE), Pierre Santos Vilela, agro-business analyst (FAEMG) and Harrison Belico Coelho, technical analyst of Professional Rural Formation Coordination Unit (SENAR)
afternoon	Forestry Industry Association (AMIF)	Taiana Guimarães Arriel, technical analyst & Igor Lopes Braga, lawyer
	Iron Industry Union of Minas Gerais (SINDIFER)	Fausto Varela Cançado, President
Saturday 20.07.19	Belo Horizonte, MG	
Sundav	Curvelo, MG	

21.07.19		
Travel to Curvelo		
Monday 22.07.19		
morning	PLANTAR	Daniel de Moura (administrator), Adriano Tonaco (consultant) and Juliana Goncalves (forestry engineer)
afternoon	Return to Belo Horizonte	
Tuesday 23.07.19	Conselheiro Lafayete, MG	
morning	Travel to Jeceaba	
afternoon	VALLOUREC	David Braga (chief, environmental unit), Felipe Said (environmental coordinator), Guilherme Castro (environmental analysis), Leonardo Coelho (environmental corporate manager), Rodrigo de Oliveira (coordinator of iron pellet production), Alessandra Lopes (automation engineer), Rafael Neiva (pellet production manager)
afternoon	Travel to Conselheiro Lafayete	
Wednesday 24.07.19	Belo Horizonte	
morning	Travel to Lamim	
morning	University of Vicosa	Cássia Carneiro, professor, UFV; Artur Queiros, researcher, UFV, Humberto Fauller, researcher, UFV), Marcos Aurélio, extensionist, Emater, Amador Reis, charcoal producer, Geraldo de Lourdes, charcoal producer
afternoon	Travel back to Belo Horizonte	
Thursday 25.07.19	Brasilia	
Travel to Brasilia		
Friday 26.07.19	Brasilia	
morning	UNDP UN House – Sergio Vieira de Mello Complex	UNDP Project Team and CAP
afternoon	Depart Brasilia	

Annex G. List of Selected Documents Reviewed/Consulted

UNDP documents.

- UNDP, 2018. Country Programme: Nationally Determined Contribution (NDC).
- UNDP, 2018. Project Implementation Review (PIR). Brazil Charcoal.
- UNDP 2018. Progress Report. Brazil Charcoal.
- UNDP, 2017. Project Implementation Review (PIR). Brazil Charcoal.
- UNDP 2017. Progress Report. Brazil Charcoal.
- UNDP, 2016. Project Implementation Review (PIR). Brazil Charcoal.
- UNDP: 2016. Fourth National Communication and Biennial Update Reports to the United Nations Framework Convention on Climate Change (UNFCCC). Project Document (19.12.2014 – from GEF project website).
- UNDP, 2016. Country Programme Document for Brazil (2017-2021).
- UNDP, 2016. Inception Workshop Report. Production of sustainable, renewable biomass-based Charcoal for the iron and steel industry in Brazil Project. MMA/UNDP/GEF. Brasilia.
- UNDP, 2015. Project Document (PRODOC): Brazil: Production of Sustainable, Renewable Biomass-based Charcoal for the Iron and Steel Industry in Brazil (signed 12/06/15).

Government documents

- Project Advisory Committee (CAP) Meeting Minutes
- MCITI, et. al., 2017. Brazil's 2nd Biennial Update Report to the United Nations Framework Convention on Climate Change.
- MMA, 2018. Minutes of the CAP Meeting (Esplanada dos Ministérios, Bloco B, Brasília / DF 29.08.201)
- MMA, 2017a. Minutes of the CAP Meeting (Esplanada dos Ministérios, Bloco B, Brasília / DF 12.12.2017)
- MMA, 2017b. Minutes of the CAP Meeting (Esplanada dos Ministérios, Bloco B, Brasília / DF 6.12.2017).
- MMA, 2016. Minutes of the 1st CAP Meeting, pts 1 & 2 (Esplanada dos Ministérios, Bloco B, Brasília / DF 14.2.2016)

GEF documents.

- GEF Request for CEO Endorsement/Approval Template (07.12.2013)
- GEF Project Identification Form (PIF) (23/3/2012)
- STAP Scientific and Technical Screening of the Project Identification Form (29/4/2012)
- GEF Secretariat Review for Full/Medium-Sized Projects (26/3/2012)

Other documents.

- Christophe de Gouvello, C, Diwald and Nogueira de Avelar Marques, F. 2018. From Project to Global Public Good: The story of the Plantar Group – World Bank Partnership, IBRD, 2018.

Brazil: Plantar, et al, 2016. Use of Charcoal from Renewable Biomass Plantations as Reducing Agent in Pig Iron Mill in Brazil. CDM Project design document (Version 08.0).

Lopes, Nathália Lima et al., 2018. Brazilian Green Steel, Ciflorestas, Vicosas

Luiz Augusto Horta Nogueira, L.A., Coelho, S.T., and CENBIO & Alexandre Uhlig, A. Sustainable Charcoal Production in Brazil. FAO.

Selected internet addresses.

<http://www.mma.gov.br/>

<http://www.ibge.gov.br>

<http://www.MCTICc.gov.br/>

<http://www.inpe.br/>

<http://www.emater.mg.gov.br>

http://www.sebrae.com.br/sites/PortalSebrae/ufs/mg/quem_somos?codUf=14

<https://www.ufv.br>

<http://www.vallourec.com/EN/group/MEDIA/Press/Pages/Merge-VBR-VSB.aspx>

<http://www.agricultura.gov.br>

<http://www.faeng.org.br>

<http://amif.org.br>

<http://www.br.undp.org>

<http://www.sindiferes.com.br>

<http://www.abrafe.ind.br>

<http://www.mdic.gov.br/>

Annex H. Co-financing

Table 1. Comparative Assessment of Sources and Amounts of Co-Financing at time of MTR in US\$

Sources of Co-financing (at time of CEO Endorsement)	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount at time of Project Approval (US\$)	Actual Co-financing Amount at time of MTR (US\$) ¹	Difference in Co-financing Amount at time of MTR (US\$)
National Government	Ministry of Environment (MMA)	Cash	4,500,000	711,596	-3,788,404
National Government	Ministry of Science, Technology and Innovation (MCTI)	Cash	2,000,000	271,314	-1,728,685
State Government	State of Minas Gerais	Cash	2,100,000	259,065	-1,840,934
Private sector	Company loans (through BNDES)	Cash	25,000,000	0	-25,000,000
Private sector ²	Private sector companies supported by tender mechanism	In-kind	2,900,000	0	-
GEF Agency ³	UNDP	Cash	200,000	0	
GEF Agency ³	UNDP	In-kind	100,000	0	
Total Co-financing			36,800,000		

¹US\$ = R\$ 3,87

²Companies supported by the tender mechanism offered R\$ 89 million in co-financing (investment/in-kind), amount that will be authenticated during the audit at the end of the contracts (results payment).

³Under revision by PO.

Table 2. Additional Sources and Amounts of Co-Financing Secured and Projected at time of MTR in US\$

Sources of Co-financing (following CEO Endorsement and MTR)		Type of Co-financing (cash, in-kind)	Amount of Co-financing ¹
Confirmed			
UFV		Cash, in-kind	10,013
Projected			
Private sector	Plantar	Cash, in-kind	1,663,552
Private sector	Rima	Cash, in-kind	2,583,979
Private sector	Vallourec	Cash, in-kind	2,015,504
Private sector	ArcelorMittal	Cash, in-kind	749,354
Private sector	ArcelorMittal	Cash, in-kind	4,713,017
Private sector	PCE/Cossisa	Cash, in-kind	1,442,067
Private sector	Rima	Cash, in-kind	1,283,259
Total Additional Co-financing			14,460,745

¹US\$ = R\$ 8.87 (July 2019)

Annex I: UNEG Code of Conduct for Evaluators/Midterm Review Consultants

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

MTR Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: Random DuBois

Name of Consultancy Organization (where relevant): NA

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Luzern, Switzerland on 17 June 2019

Signature:



Annex J: MTR Report Clearance Form

(to be completed by the Commissioning Unit and UNDP-GEF RTA and included in the final document)

Midterm Review Report Reviewed and Cleared By:

Commissioning Unit

Name: _____

Signature: _____ Date: _____

UNDP-GEF Regional Technical Advisor

Name: _____

Signature: _____ Date: _____

Annex K: Audit Trail Template

To the comments received on (date) from the Midterm Review of Production of sustainable, renewable biomass-based Charcoal for the iron and steel industry in Brazil (UNDP Project ID-4675 #)

The following comments were provided in track changes to the draft Midterm Review report; they are referenced by institution (“Author” column) and track change comment number (“#” column):

Author	#	Para No./ comment location	Comment/Feedback on the draft MTR report	MTR team response and actions taken
UNDP Brazil	1	Basic Report Information	Correct UNDP/GEF ID.	Accepted
UNDP Brazil	2	Basic Report Information	Correct title for staff member	Accepted
UNDP Brazil	3	Acronyms	Correction for ABRAFE acronym	Accepted
UNDP Brazil	4	Acronyms	Correction for AMIF acronym	Accepted
UNDP Brazil	5	Acronyms	Correction for BdoB acronym	Accepted
UNDP Brazil	6	Acronyms	Correction for MAPA acronym	Accepted
UNDP Brazil	7	Acronyms	Correction for MCTIC acronym	Accepted
UNDP Brazil	8	Acronyms	Correction for MDIC acronym	Accepted
UNDP Brazil	9	Acronyms	Correction for ME acronym	Accepted
UNDP Brazil	10	Acronyms	Correction for SEBRAE acronym	Accepted
UNDP Brazil	11	Acronyms	Correction for Silviminias acronym	Accepted
UNDP Brazil	12	Executive Summary	GEF/UNDP Project ID	Accepted
UNDP GEF	13	Executive Summary	TE should have deadline 3 months before closing date	Accepted
UNDP GEF	14	Executive Summary	Revise closing PRODOC date according to PIMS+ June 2020	Accepted
UNDP Brazil	15	Executive Summary	Financial incentive consultancy	Accepted
UNDP Brazil	16	Executive Summary	Demonstration units in Output 2.1	Accepted
UNDP Brazil	17	Executive Summary	Savings reallocated in same component	Accepted
UNDP GEF	18	Executive Summary	Rating scale definition	Accepted
UNDP Brazil	19	Executive Summary	Correction of number of people trained	Accepted

UNDP Brazil	20	Executive Summary	Co-financing	Modified
UNDP Brazil	21	Executive Summary	UVC to replace UFV	Accepted
UNDP Brazil	22	Executive Summary	Co-financing	It is the Mission's view that the externality of the significant devaluation of the local currency over the period between the PRODOC and MTR resulting in a smaller co-financing gap does not account for the non-materialization of the sources and amounts of co-financing envisioned at the time of the PRODOC. The use of constant US\$ and/or R\$ adjusted for devaluation over the period leading up to the MTR would be a more accurate means to assess co-financing.
UNDP Brazil	23	Executive Summary	Confirmation of closing date	Accepted
MMA	24	Executive Summary	Clarification of project management costs reduction	Accepted
UNDP Brazil	25	Executive Summary	Comments from MMA on staff reduction	Noted
UNDP Brazil	26	3	AMIF	Accepted
UNDP Brazil	27	20	Federal Law 12,114	Accepted
UNDP Brazil	28	24	Minas Gerais state law	Accepted
UNDP Brazil	29	31	DIM vs NIM execution	Accepted
UNDP Brazil	30	31	MCTIC competence	Accepted
UNDP Brazil	31	31	Project oversight team	Accepted
UNDP Brazil	32	32	PAC vs PSC	Footnote added
UNDP GEF	33	Table 2	Adjust original planned closing date to June 2020.	Not accepted. Signed PRODOC

				of 12/06/2015 states “End Date” is December 2019.
UNDP Brazil	34	42	Sebrae fostering planted forests	Accepted
UNDP Brazil	35	48	Replace GEF 4 with GEF 5	Accepted
UNDP Brazil	36	51	Co-financing	See response to comment #22 above.
UNDP Brazil	37	54	Adjust number of persons trained to 367.	Accepted
UNDP Brazil	38	60	Economic crisis	Clarified
UNDP Brazil	39	60	Oil crisis in 2013	Accepted
UNDP Brazil	40	60	2018 elections	Modified
UNDP Brazil	41	60	Use of arguments to justify extension	The recommendation for a “conditional” extension was not based on externalities affecting the policy environment during implementation but the apparent lack of an enabling framework to achieve the policy outcome at the projected time of project closure.
UNDP GEF / UNDP Brazil	42	61	PRODOC signing date	Accepted
UNDP Brazil	43	72	Replace 2016 with 2013	Accepted
UNDP Brazil	44	73	Add Table 12b (to this section)	Accepted (presented as Table 7b)
UNDP Brazil	45	Table 7	Adjust co-financing to R\$ 55,9 million.	Accepted
UNDP GEF	46	76	Gender analysis	Accepted
UNDP Brazil	47	80	Partnerships	Accepted
UNDP Brazil	48	81	Technical support group	Modified
UNDP Brazil	49	106	Co-financing	See response to comment #22 above.
UNDP GEF	50	107	METT revision	Comment noted.

UNDP GEF	51	108	Recommendation requested for realistic co-financing adjustment	The PMU and partners are much better placed to adjust this to reflect existing environment.
UNDP GEF	52	108	Lack of clarity	The PMU and team was not able to document the methodology to be used to calculate indirect emission nor baseline. In the absence of this information the indicator has little value unless a new baseline would be determined and tracked for the remaining period of project implementation.
UNDP GEF / UNDP Brazil	53	109	Confirmation of Atlas closing date	Accepted
MCTIC/MMA/ABC	54	110	Justification for project extension	Noted
UNDP GEF	55	Annex L	METT excel sheets and target adjustments	<p>No excel sheets were provided the MTR mission (only the METTs). These should be provided by the PMU.</p> <p>Once a decision is taken on an extension it is suggested that the PMU and partners hold a workshop that among other tasks should revise the relevant indicators and targets where needed)</p>

UNDP GEF	56	Annex L	Completion of METTs	This should be completed by PMU as called for in the MTR TORs.
----------	----	---------	---------------------	--

Annex L: Relevant midterm tracking tools



(For CEO
Endorsement)

Tracking Tool for Climate Change Mitigation Projects

Special Notes: reporting on lifetime emissions avoided

Lifetime direct GHG emissions avoided: Lifetime direct GHG emissions avoided are the emissions reductions attributable to the investments made during the project's supervised implementation period, totaled over the respective lifetime of the investments.

Lifetime direct post-project emissions avoided: Lifetime direct post-project emissions avoided are the emissions reductions attributable to the investments made outside the project's supervised implementation period, but supported by financial facilities put in place by the GEF project, totaled over the respective lifetime of the investments. These financial facilities will still be operational after the project ends, such as partial credit guarantee facilities, risk mitigation facilities, or revolving funds.

Lifetime indirect GHG emissions avoided (top-down and bottom-up): indirect emissions reductions are those attributable to the long-term outcomes of the GEF activities that remove barriers, such as capacity building, innovation, catalytic action for replication.

Please refer to the following references for Calculating GHG Benefits of GEF Projects.

[Manual for Energy Efficiency and Renewable Energy Projects](#)

[Revised Methodology for Calculating Greenhouse Gas Benefits of GEF Energy Efficiency Projects \(Version 1.0\)](#)

[Manual for Transportation Projects](#)

For LULUCF projects, the definitions of "lifetime direct and indirect" apply. Lifetime length is defined to be 20 years, unless a different number of years is deemed appropriate. For emission or removal factors (tonnes of CO₂eq per hectare per year), use IPCC defaults or country specific factors.

General Data	Target at CEO Endorsement	Notes
Project Title	Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil	
GEF ID	4718	
Agency Project ID	4675	
Country	Brazil	
Region	LCR	
GEF Agency	UNDP	
Date of Council/CEO Approval	June 7, 2012	Month DD, YYYY (e.g., May 12, 2010)

GEF Grant (US\$)	7.150.000	
Date of submission of the tracking tool	December 7, 2013	Month DD, YYYY (e.g., May 12, 2010)
Is the project consistent with the priorities identified in National Communications, Technology Needs Assessment, or other Enabling Activities under the UNFCCC?	1	Yes = 1, No = 0
Is the project linked to carbon finance?	0	Yes = 1, No = 0
Cofinancing expected (US\$)	36.800.000	

Objective 1: Transfer of Innovative Technologies		
Please specify the type of enabling environment created for technology transfer through this project		
National innovation and technology transfer policy		Yes = 1, No = 0
Innovation and technology centre and network		Yes = 1, No = 0
Applied R&D support		Yes = 1, No = 0
South-South technology cooperation		Yes = 1, No = 0
North-South technology cooperation		Yes = 1, No = 0
Intellectual property rights (IPR)		Yes = 1, No = 0
Information dissemination		Yes = 1, No = 0
Institutional and technical capacity building		Yes = 1, No = 0
Other (please specify)		
Number of innovative technologies demonstrated or deployed		
Please specify three key technologies for demonstration or deployment		
Area of technology 1		
Type of technology 1		specify type of technology
Area of technology 2		
Type of technology 2		specify type of technology
Area of technology 3		
Type of technology 3		specify type of technology

Status of technology demonstration/deployment		0: no suitable technologies are in place 1: technologies have been identified and assessed 2: technologies have been demonstrated on a pilot basis 3: technologies have been deployed 4: technologies have been diffused widely with investments 5: technologies have reached market potential
Lifetime direct GHG emissions avoided	-	tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided	-	tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)	-	tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)	-	tonnes CO2eq (see Special Notes above)

Objective 2: Energy Efficiency		
Please specify if the project targets any of the following areas		
Lighting	0	Yes = 1, No = 0
Appliances (white goods)	0	Yes = 1, No = 0
Equipment	0	Yes = 1, No = 0
Cook stoves	0	Yes = 1, No = 0
Existing building	0	Yes = 1, No = 0
New building	0	Yes = 1, No = 0
Industrial processes	1	Yes = 1, No = 0
Synergy with phase-out of ozone depleting substances	0	Yes = 1, No = 0
Other (please specify)		
Policy and regulatory framework	5	0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not

		enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)	5	0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building	5	0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Lifetime energy saved		MJ (Million Joule, IEA unit converter: http://www.iea.org/stats/unit.asp) Fuel savings should be converted to energy savings by using the net calorific value of the specific fuel. End-use electricity savings should be converted to energy savings by using the conversion factor for the specific supply and distribution system. These energy savings are then totaled over the respective lifetime of the investments.
Lifetime direct GHG emissions avoided	432.000	tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)	7.000.000	tonnes CO2eq (see Special Notes above)

Objective 3: Renewable Energy		
Please specify if the project includes any of the following areas		
Heat/thermal energy production	1	Yes = 1, No = 0
On-grid electricity production	0	Yes = 1, No = 0
Off-grid electricity production	0	Yes = 1, No = 0
Policy and regulatory framework	5	0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)	5	0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building	5	0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Installed capacity per technology directly resulting from the project		
Wind		MW
Biomass		MW el (for electricity production)

Biomass		MW th (for thermal energy production)
Geothermal		MW el (for electricity production)
Geothermal		MW th (for thermal energy production)
Hydro		MW
Photovoltaic (solar lighting included)		MW
Solar thermal heat (heating, water, cooling, process)		MW th (for thermal energy production, 1m ² = 0.7kW)
Solar thermal power		MW el (for electricity production)
Marine power (wave, tidal, marine current, osmotic, ocean thermal)		MW
Lifetime energy production per technology directly resulting from the project (IEA unit converter: http://www.iea.org/stats/unit.asp)		
Wind		MWh
Biomass		MWh el (for electricity production)
Biomass		MWh th (for thermal energy production)
Geothermal		MWh el (for electricity production)
Geothermal		MWh th (for thermal energy production)
Hydro		MWh
Photovoltaic (solar lighting included)		MWh
Solar thermal heat (heating, water, cooling, process)		MWh th (for thermal energy production)
Solar thermal power		MWh el (for electricity production)
Marine energy (wave, tidal, marine current, osmotic, ocean thermal)		MWh
Lifetime direct GHG emissions avoided		tonnes CO ₂ eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO ₂ eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO ₂ eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)	2.000.000	tonnes CO ₂ eq (see Special Notes above)

Objective 4: Transport and Urban Systems		
Please specify if the project targets any of the following areas		
Bus rapid transit		Yes = 1, No = 0

Other mass transit (e.g., light rail, heavy rail, water or other mass transit; excluding regular bus or minibus)		Yes = 1, No = 0
Logistics management		Yes = 1, No = 0
Transport efficiency (e.g., vehicle, fuel, network efficiency)		Yes = 1, No = 0
Non-motorized transport (NMT)		Yes = 1, No = 0
Travel demand management		Yes = 1, No = 0
Comprehensive transport initiatives (Involving the coordination of multiple strategies from different transportation sub-sectors)		Yes = 1, No = 0
Sustainable urban initiatives		Yes = 1, No = 0
Policy and regulatory framework		0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building		0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained

Length of public rapid transit (PRT)		km
Length of non-motorized transport (NMT)		km
Number of lower GHG emission vehicles		
Number of people benefiting from the improved transport and urban systems		
Lifetime direct GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO2eq (see Special Notes above)

Objective 5: LULUCF		
Area of activity directly resulting from the project		
Conservation and enhancement of carbon in forests, including agroforestry		ha
Conservation and enhancement of carbon in nonforest lands, including peat land		ha
Avoided deforestation and forest degradation		ha
Afforestation/reforestation		ha
Good management practices developed and adopted		0: not an objective/component 1: no action 2: developing prescriptions for sustainable management 3: development of national standards for certification 4: some of area in project certified 5: over 80% of area in project certified

Carbon stock monitoring system established		0: not an objective/component 1: no action 2: mapping of forests and other land areas 3: compilation and analysis of carbon stock information 4: implementation of science based inventory/monitoring system 5: monitoring information database publicly available
Lifetime direct GHG emission avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emission avoided		tonnes CO2eq (see Special Notes above)
Lifetime direct carbon sequestration		tonnes CO2eq (see Special Notes above)
Lifetime indirect carbon sequestration		tonnes CO2eq (see Special Notes above)

Objective 6: Enabling Activities		
Please specify the number of Enabling Activities for the project (for a multiple country project, please put the number of countries/assessments)		
National Communication		
Technology Needs Assessment		
Nationally Appropriate Mitigation Actions		
Other		
Does the project include Measurement, Reporting and Verification (MRV) activities?		Yes = 1, No = 0



(For Mid-term
Evaluation)

Tracking Tool for Climate Change Mitigation Projects

Special Notes: reporting on lifetime emissions avoided

Lifetime direct GHG emissions avoided: Lifetime direct GHG emissions avoided are the emissions reductions attributable to the investments made **until the mid-term evaluation**, totaled over the respective lifetime of the investments. Please refer to the Manual for Calculating GHG Benefits of GEF Projects.

[Manual for Energy Efficiency and Renewable Energy Projects](#)

[Manual for Transportation Projects](#)

For LULUCF projects, the definition of "lifetime direct" applies. Lifetime length is defined to be 20 years, unless a different number of years is deemed appropriate. For emission or removal factors (tonnes of CO₂eq per hectare per year), use IPCC defaults or country specific factors.

General Data		Results at Mid-term Evaluation	Notes
Project Title	Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil		
GEF ID	4718		Month DD, YYYY (e.g., May 12, 2010)
Agency Project ID	4675		
Country	Brazil		
Region	LCR		
GEF Agency	UNDP		
Date of Council/CEO Approval	June 7, 2012		
GEF Grant (US\$)	7.150.000		
Date of submission of the tracking tool	December 7, 2013		Month DD, YYYY (e.g., May 12, 2010)
Is the project consistent with the priorities identified in National Communications, Technology Needs Assessment, or other Enabling Activities under the UNFCCC?	1		Yes = 1, No = 0
Is the project linked to carbon finance?	0		Yes = 1, No = 0
Cumulative cofinancing realized (US\$)			

Cumulative additional resources mobilized (US\$)	-	additional resources means beyond the cofinancing committed at CEO endorsement
--	---	--

Objective 1: Transfer of Innovative Technologies		
Please specify the type of enabling environment created for technology transfer through this project		
National innovation and technology transfer policy		Yes = 1, No = 0
Innovation and technology centre and network		Yes = 1, No = 0
Applied R&D support		Yes = 1, No = 0
South-South technology cooperation		Yes = 1, No = 0
North-South technology cooperation		Yes = 1, No = 0
Intellectual property rights (IPR)		Yes = 1, No = 0
Information dissemination		Yes = 1, No = 0
Institutional and technical capacity building		Yes = 1, No = 0
Other (please specify)		
Number of innovative technologies demonstrated or deployed		
Please specify three key technologies for demonstration or deployment		
Area of technology 1		
Type of technology 1		specify type of technology
Area of technology 2		
Type of technology 2		specify type of technology
Area of technology 3		
Type of technology 3		specify type of technology
Status of technology demonstration/deployment		0: no suitable technologies are in place 1: technologies have been identified and assessed 2: technologies have been demonstrated on a pilot basis 3: technologies have been deployed 4: technologies have been diffused widely with

		investments 5: technologies have reached market potential
Lifetime direct GHG emissions avoided		tonnes CO2eq (see Special Notes above)

Objective 2: Energy Efficiency		
Please specify if the project targets any of the following areas		
Lighting	0	Yes = 1, No = 0
Appliances (white goods)	0	Yes = 1, No = 0
Equipment	0	Yes = 1, No = 0
Cook stoves	0	Yes = 1, No = 0
Existing building	0	Yes = 1, No = 0
New building	0	Yes = 1, No = 0
Industrial processes	1	Yes = 1, No = 0
Synergy with phase-out of ozone depleting substances	0	Yes = 1, No = 0
Other (please specify)		
Policy and regulatory framework	1	0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced

Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building	3	0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Lifetime energy saved		MJ (Million Joule, IEA unit converter: http://www.iea.org/stats/unit.asp) Fuel savings should be converted to energy savings by using the net calorific value of the specific fuel. End-use electricity savings should be converted to energy savings by using the conversion factor for the specific supply and distribution system. These energy savings are then totaled over the respective lifetime of the investments.
Lifetime direct GHG emissions avoided	-	tonnes CO2eq (see Special Notes above)

Objective 3: Renewable Energy		
Please specify if the project includes any of the following areas		
Heat/thermal energy production	0	Yes = 1, No = 0
On-grid electricity production		Yes = 1, No = 0
Off-grid electricity production		Yes = 1, No = 0

Policy and regulatory framework	1	0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)	1	0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building	1	0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Installed capacity per technology directly resulting from the project		
Wind		MW
Biomass		MW el (for electricity production)
Biomass		MW th (for thermal energy production)
Geothermal		MW el (for electricity production)
Geothermal		MW th (for thermal energy production)
Hydro		MW
Photovoltaic (solar lighting included)		MW
Solar thermal heat (heating, water, cooling, process)		MW th (for thermal energy production, 1m² = 0.7kW)
Solar thermal power		MW el (for electricity production)

Marine power (wave, tidal, marine current, osmotic, ocean thermal)		MW
Lifetime energy production per technology directly resulting from the project (IEA unit converter: http://www.iea.org/stats/unit.asp)		
Wind		MWh
Biomass		MWh el (for electricity production)
Biomass		MWh th (for thermal energy production)
Geothermal		MWh el (for electricity production)
Geothermal		MWh th (for thermal energy production)
Hydro		MWh
Photovoltaic (solar lighting included)		MWh
Solar thermal heat (heating, water, cooling, process)		MWh th (for thermal energy production)
Solar thermal power		MWh el (for electricity production)
Marine energy (wave, tidal, marine current, osmotic, ocean thermal)		MWh
Lifetime direct GHG emissions avoided		tonnes CO2eq (see Special Notes above)

Objective 4: Transport and Urban Systems		
Please specify if the project targets any of the following areas		
Bus rapid transit		Yes = 1, No = 0
Other mass transit (e.g., light rail, heavy rail, water or other mass transit; excluding regular bus or minibus)		Yes = 1, No = 0
Logistics management		Yes = 1, No = 0
Transport efficiency (e.g., vehicle, fuel, network efficiency)		Yes = 1, No = 0
Non-motorized transport (NMT)		Yes = 1, No = 0
Travel demand management		Yes = 1, No = 0
Comprehensive transport initiatives (Involving the coordination of multiple strategies from different transportation sub-sectors)		Yes = 1, No = 0
Sustainable urban initiatives		Yes = 1, No = 0

Policy and regulatory framework		0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building		0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Length of public rapid transit (PRT)		km
Length of non-motorized transport (NMT)		km
Number of lower GHG emission vehicles		
Number of people benefiting from the improved transport and urban systems		
Lifetime direct GHG emissions avoided		tonnes CO ₂ eq (see Special Notes above)

Objective 5: LULUCF

Area of activity directly resulting from the project

Conservation and enhancement of carbon in forests, including agroforestry		ha
Conservation and enhancement of carbon in nonforest lands, including peat land		ha
Avoided deforestation and forest degradation		ha
Afforestation/reforestation		ha
Good management practices developed and adopted		0: not an objective/component 1: no action 2: developing prescriptions for sustainable management 3: development of national standards for certification 4: some of area in project certified 5: over 80% of area in project certified
Carbon stock monitoring system established		0: not an objective/component 1: no action 2: mapping of forests and other land areas 3: compilation and analysis of carbon stock information 4: implementation of science based inventory/monitoring system 5: monitoring information database publicly available
Lifetime direct GHG emission avoided		tonnes CO ₂ eq
Lifetime direct carbon sequestration		tonnes CO ₂ eq

Objective 6: Enabling Activities		
Please specify the number of Enabling Activities for the project (for a multiple country project, please put the number of countries/assessments)		
National Communication		
Technology Needs Assessment		
Nationally Appropriate Mitigation Actions		
Other		

Does the project include Measurement, Reporting and Verification (MRV) activities?

Yes = 1, No = 0



(For Terminal
 Evaluation)

Tracking Tool for Climate Change Mitigation Projects

Special Notes: reporting on lifetime emissions avoided

Lifetime direct GHG emissions avoided: Lifetime direct GHG emissions avoided are the emissions reductions attributable to the investments made **during the project's supervised implementation period**, totaled over the respective lifetime of the investments.

Lifetime direct post-project emissions avoided: Lifetime direct post-project emissions avoided are the emissions reductions attributable to the investments made outside the project's supervised implementation period, but supported by financial facilities put in place by the GEF project, totaled over the respective lifetime of the investments. These financial facilities will still be operational after the project ends, such as partial credit guarantee facilities, risk mitigation facilities, or revolving funds.

Lifetime indirect GHG emissions avoided (top-down and bottom-up): indirect emissions reductions are those attributable to the long-term outcomes of the GEF activities that remove barriers, such as capacity building, innovation, catalytic action for replication.

Please refer to the Manual for Calculating GHG Benefits of GEF Projects.

[Manual for Energy Efficiency and Renewable Energy Projects](#)

[Manual for Transportation Projects](#)

For LULUCF projects, the definitions of "lifetime direct and indirect" apply. Lifetime length is defined to be 20 years, unless a different number of years is deemed appropriate. For emission or removal factors (tonnes of CO₂eq per hectare per year), use IPCC defaults or country specific factors.

General Data		Results at Terminal Evaluation	Notes
	Project Title		
	GEF ID		
	Agency Project ID		
	Country		
	Region		
	GEF Agency		
	Date of Council/CEO Approval		Month DD, YYYY (e.g., May 12, 2010)
	GEF Grant (US\$)		
	Date of submission of the tracking tool		Month DD, YYYY (e.g., May 12, 2010)

Is the project consistent with the priorities identified in National Communications, Technology Needs Assessment, or other Enabling Activities under the UNFCCC?		Yes = 1, No = 0
Is the project linked to carbon finance?		Yes = 1, No = 0
Cumulative cofinancing realized (US\$)		
Cumulative additional resources mobilized (US\$)		additional resources means beyond the cofinancing committed at CEO endorsement

Objective 1: Transfer of Innovative Technologies		
Please specify the type of enabling environment created for technology transfer through this project		
National innovation and technology transfer policy		Yes = 1, No = 0
Innovation and technology centre and network		Yes = 1, No = 0
Applied R&D support		Yes = 1, No = 0
South-South technology cooperation		Yes = 1, No = 0
North-South technology cooperation		Yes = 1, No = 0
Intellectual property rights (IPR)		Yes = 1, No = 0
Information dissemination		Yes = 1, No = 0
Institutional and technical capacity building		Yes = 1, No = 0
Other (please specify)		
Number of innovative technologies demonstrated or deployed		
Please specify three key technologies for demonstration or deployment		
Area of technology 1		
Type of technology 1		specify type of technology
Area of technology 2		
Type of technology 2		specify type of technology
Area of technology 3		
Type of technology 3		specify type of technology

Status of technology demonstration/deployment		0: no suitable technologies are in place 1: technologies have been identified and assessed 2: technologies have been demonstrated on a pilot basis 3: technologies have been deployed 4: technologies have been diffused widely with investments 5: technologies have reached market potential
Lifetime direct GHG emissions avoided		tonnes CO ₂ eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO ₂ eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO ₂ eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO ₂ eq (see Special Notes above)

Objective 2: Energy Efficiency		
Please specify if the project targets any of the following areas		
Lighting		Yes = 1, No = 0
Appliances (white goods)		Yes = 1, No = 0
Equipment		Yes = 1, No = 0
Cook stoves		Yes = 1, No = 0
Existing building		Yes = 1, No = 0
New building		Yes = 1, No = 0
Industrial processes		Yes = 1, No = 0
Synergy with phase-out of ozone depleting substances		Yes = 1, No = 0
Other (please specify)		
Policy and regulatory framework		0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not

		enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building		0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Lifetime energy saved		MJ (Million Joule, IEA unit converter: http://www.iea.org/stats/unit.asp) Fuel savings should be converted to energy savings by using the net calorific value of the specific fuel. End-use electricity savings should be converted to energy savings by using the conversion factor for the specific supply and distribution system. These energy savings are then totaled over the respective lifetime of the investments.
Lifetime direct GHG emissions avoided		tonnes CO ₂ eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO ₂ eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO ₂ eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO ₂ eq (see Special Notes above)

Objective 3: Renewable Energy		
Please specify if the project includes any of the following areas		
Heat/thermal energy production		Yes = 1, No = 0
On-grid electricity production		Yes = 1, No = 0
Off-grid electricity production		Yes = 1, No = 0
Policy and regulatory framework		0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building		0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Installed capacity per technology directly resulting from the project		
Wind		MW
Biomass		MW el (for electricity production)

Biomass		MW th (for thermal energy production)
Geothermal		MW el (for electricity production)
Geothermal		MW th (for thermal energy production)
Hydro		MW
Photovoltaic (solar lighting included)		MW
Solar thermal heat (heating, water, cooling, process)		MW th (for thermal energy production, 1m² = 0.7kW)
Solar thermal power		MW el (for electricity production)
Marine power (wave, tidal, marine current, osmotic, ocean thermal)		MW
Lifetime energy production per technology directly resulting from the project (IEA unit converter: http://www.iea.org/stats/unit.asp)		
Wind		MWh
Biomass		MWh el (for electricity production)
Biomass		MWh th (for thermal energy production)
Geothermal		MWh el (for electricity production)
Geothermal		MWh th (for thermal energy production)
Hydro		MWh
Photovoltaic (solar lighting included)		MWh
Solar thermal heat (heating, water, cooling, process)		MWh th (for thermal energy production)
Solar thermal power		MWh el (for electricity production)
Marine energy (wave, tidal, marine current, osmotic, ocean thermal)		MWh
Lifetime direct GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO2eq (see Special Notes above)

Objective 4: Transport and Urban Systems		
Please specify if the project targets any of the following areas		
Bus rapid transit		Yes = 1, No = 0

Other mass transit (e.g., light rail, heavy rail, water or other mass transit; excluding regular bus or minibus)		Yes = 1, No = 0
Logistics management		Yes = 1, No = 0
Transport efficiency (e.g., vehicle, fuel, network efficiency)		Yes = 1, No = 0
Non-motorized transport (NMT)		Yes = 1, No = 0
Travel demand management		Yes = 1, No = 0
Comprehensive transport initiatives (Involving the coordination of multiple strategies from different transportation sub-sectors)		Yes = 1, No = 0
Sustainable urban initiatives		Yes = 1, No = 0
Policy and regulatory framework		0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building		0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained

Length of public rapid transit (PRT)		km
Length of non-motorized transport (NMT)		km
Number of lower GHG emission vehicles		
Number of people benefiting from the improved transport and urban systems		
Lifetime direct GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO2eq (see Special Notes above)

Objective 5: LULUCF		
Area of activity directly resulting from the project		
Conservation and enhancement of carbon in forests, including agroforestry		ha
Conservation and enhancement of carbon in nonforest lands, including peat land		ha
Avoided deforestation and forest degradation		ha
Afforestation/reforestation		ha
Good management practices developed and adopted		0: not an objective/component 1: no action 2: developing prescriptions for sustainable management 3: development of national standards for certification 4: some of area in project certified 5: over 80% of area in project certified

Carbon stock monitoring system established		0: not an objective/component 1: no action 2: mapping of forests and other land areas 3: compilation and analysis of carbon stock information 4: implementation of science based inventory/monitoring system 5: monitoring information database publicly available
Lifetime direct GHG emission avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emission avoided		tonnes CO2eq (see Special Notes above)
Lifetime direct carbon sequestration		tonnes CO2eq (see Special Notes above)
Lifetime indirect carbon sequestration		tonnes CO2eq (see Special Notes above)

Objective 6: Enabling Activities		
Please specify the number of Enabling Activities for the project (for a multiple country project, please put the number of countries/assessments)		
National Communication		
Technology Needs Assessment		
Nationally Appropriate Mitigation Actions		
Other		
Does the project include Measurement, Reporting and Verification (MRV) activities?		Yes = 1, No = 0

Annex M: Progress Towards Results Matrix (Outcomes against End-of-project Targets)

Project Strategy	Indicator	Baseline Level	Level in 1 st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assessment	Achievement Rating	Justification for Rating
Objective: To develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production, supported by an effective policy framework.	Number of commercially demonstrated efficient charcoal conversion technologies.	at least three (3) technological concepts under development by private firms ¹⁹ ; no (0) commercial demonstration (as of 2013).	Not set or applicable (NA)	NA	at least three (3) charcoal production plants in commercial operation; at least three (3) successful business models; at least one (1) proven conversion technology		NA	NA
	Average gravimetric yield implemented technologies	25% for small producers (hot-tail) 29% for industrial (brick kiln)	NA	NA	32% or better		NA	NA
	Policy and regulatory framework (for renewable charcoal use in Minas Gerais) ²⁰	1 (no strategy in place)	NA	NA	4 (strategy adopted)		NA	NA
	GHG emissions reductions (Mton CO ₂ eq)	0	NA	NA	direct: 432 kton (CCM-2) indirect: 700 kton/yr (CCM-2); 200 kton/yr (CCM-3)		NA	NA
	Investment capital leveraged for efficient charcoal production	0	NA	NA	US\$ 40,000,000		NA	NA

78. ¹⁹ Including Plantar, ArcelorMittal, CEMIG, RIMA.

79. ²⁰ Indicator and rating (from 0 to 5) according to GEF Tracking Tool for CCM Objective 3 (Renewable Energy).

Outcome 1: A policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions..	Renewable charcoal strategy in MG	No strategy to stimulate charcoal technology development (0) ²¹	NA	NA	Detailed strategy designed and adopted by MG State Government (1)		NA	NA
	MRV system for charcoal production and GHG benefits for I&S sector agents	No system in place (0)	NA	NA	MRV system implemented and operational (1)		NA	NA
	Acceptable methodologies and criteria to assess charcoal production chains.	No acceptable methodology in place (0).	NA	NA	Acceptable methodologies in place to perform quantitative evaluations/ assessments (1)		NA	NA
	Financial incentives for (a) use of renewable charcoal by I&S sector in MG; (b) investment in efficient, clean charcoal production chains	(a) No incentives for renewable charcoal use (0); (b) No incentives for investment in efficient, clean charcoal production chains (0).	NA	NA	(a) Incentives for renewable charcoal use in place (1); (b) Incentives in place for investment in efficient, clean charcoal production chains (1).		NA	NA
Outcome 2: A policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions.	Charcoal technology test program carried out.	Isolated technology development efforts with low sector coordination level (0).	NA	NA	Concerted charcoal technology development program executed (1)		NA	NA
	By-products utilization technology program carried out.	Isolated private initiatives to develop technologies for utilization of charcoal by-products (0).	NA	NA	Concerted by-products technology program carried out (1).		NA	NA

80. ²¹ A ban on the use of non-renewable charcoal is in place in MG (forestry law No. 18.365/09).

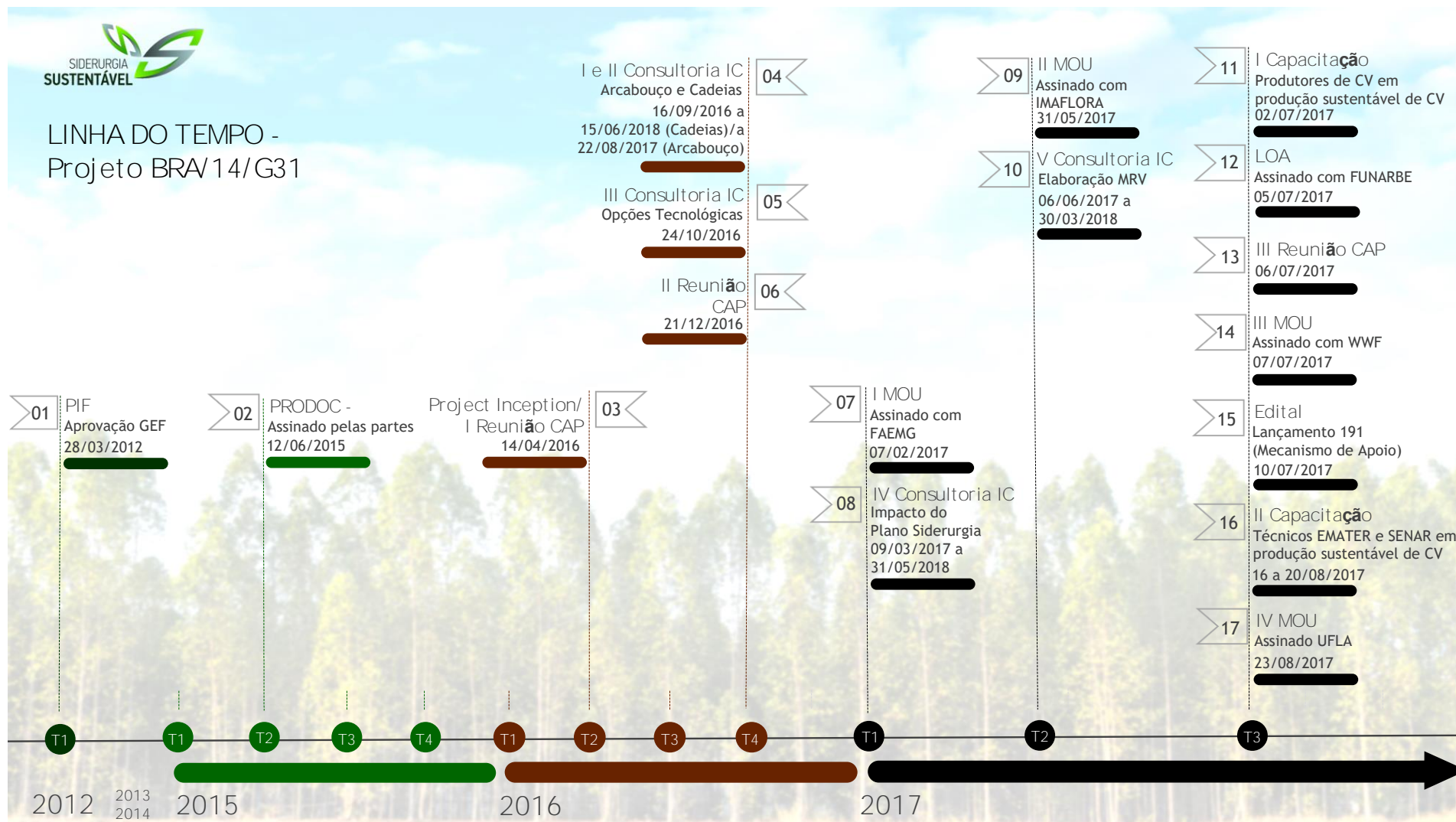
Federative Republic of Brazil
Production of Sustainable, Renewable Biomass-based Charcoal for the Iron and Steel Industry in Brazil
Mid-term Review (MTR)

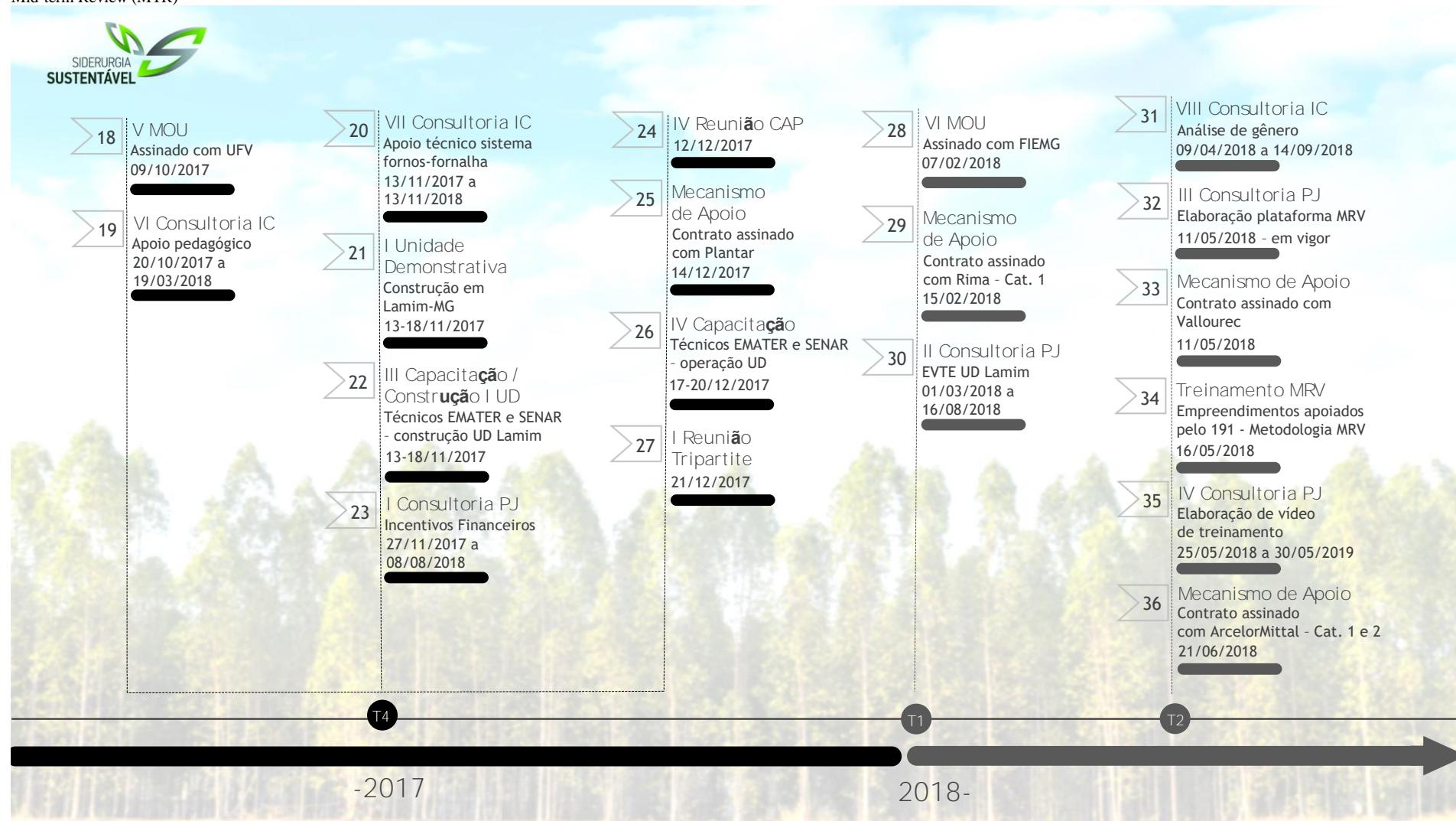
	(a) Number of developed business models; (b) number of expressions of interest (EoI) from local charcoal producers; (c) seminar/workshop on efficient charcoal production chains.	(a) Some business models conceived but not commercially proven yet (0); (b) No (0) EoI's; (c) No (0) seminar held;	NA	NA	(a) At least four (4) different business models developed and accepted by charcoal producers; (b) At least six (6) EoI's signed; (c) One (1) seminar held.		NA	NA
	(a) Training material; (b) Number of training programs implemented	(a) No training material developed (0); No training program (0)	NA	NA	(a) Training material developed (1); At least three (3) training programs being executed.		NA	NA
Outcome 3: Commercial charcoal production facilities are built under a competitive bidding mechanism to deliver objectively verifiable renewable, biomass-based charcoal and GHG emission reductions..	Tender mechanism negotiated and formalized	Proposal for tender mechanism prepared by MMA (0)	NA	NA	Tender mechanism negotiated and formalized (1)		NA	NA
	Consultancies to support project development	No (0) consultancies	NA	NA	At least three efficient charcoal conversion facilities are ready for the investment phase of the program.		NA	NA
	(a) Number of efficient, clean charcoal production facilities in place; (b) Charcoal production per plant (tons/yr); (c) Wood-charcoal conversion rate per plant (%); (d) GHG emission reductions per plant (tons CO2eq/yr)	(a) No (0) facilities in place; (b) No production (0 tons/yr); (b) baseline technology conversion rates are 25-30%; (c) No emission reductions (0 ton CO2eq/yr).	NA	NA	(a) At least three (3) commercial facilities procured and operating, including one small-scale (under 1,000 tons); (b) 80,000 tons charcoal produced per year; (c) at least 33% conversion rate (weighted average); (d) 21,6 kton CO2eq/yr		NA	NA

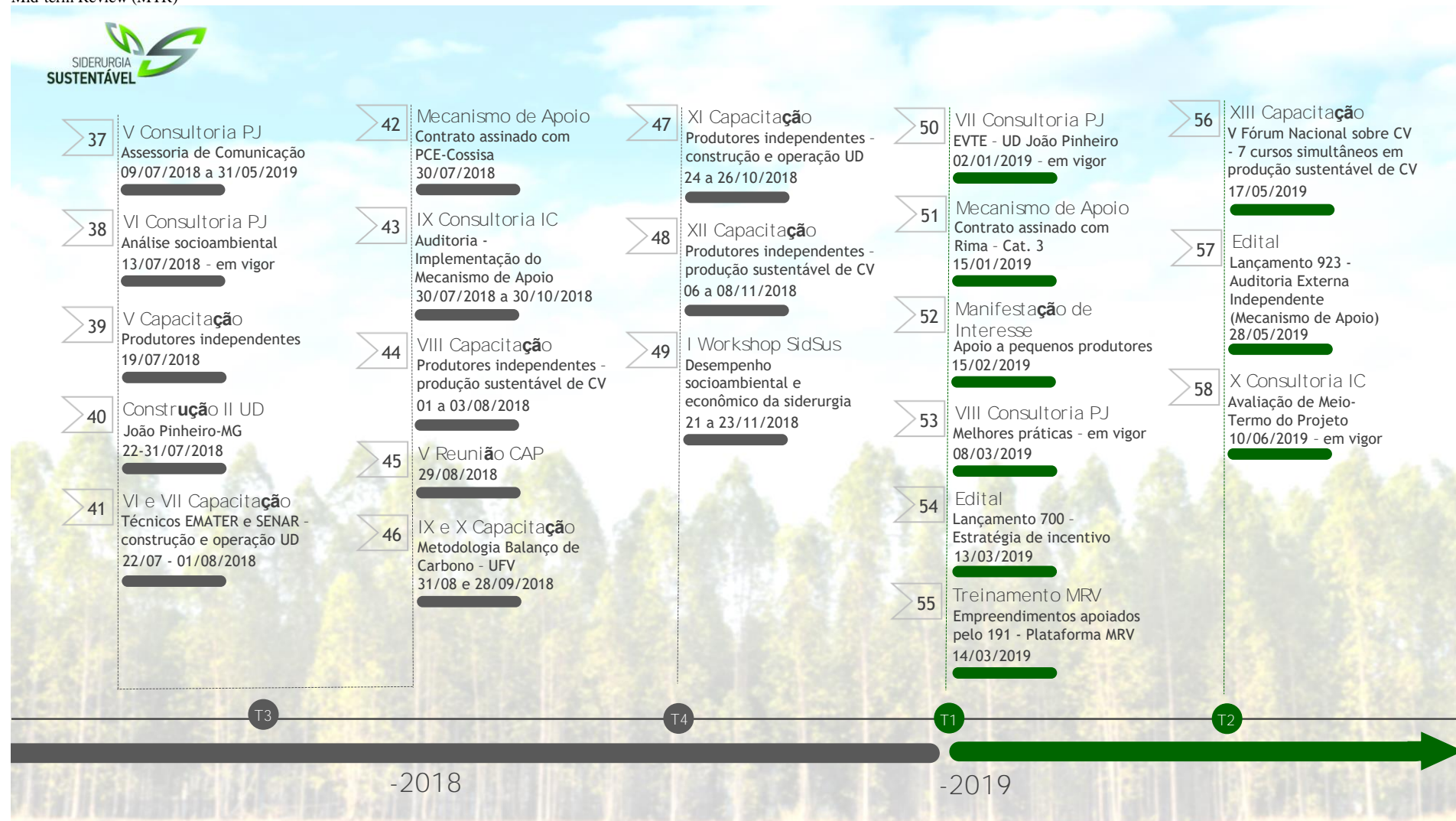
Federative Republic of Brazil
 Production of Sustainable, Renewable Biomass-based Charcoal for the Iron and Steel Industry in Brazil
 Mid-term Review (MTR)

	(a) Documents and presentations with best practices; (b) international event to disseminate clean charcoal production	(a) No documents (0); No event (0)	NA	NA	(a) Documents and presentations compiled (1); (b) International event held (1).		NA	NA
--	---	------------------------------------	----	----	---	--	----	----

Annex N: Project Time Line (prepared by Matheus Valerio Fontenelle Mesquita, UNDP PMU)









Annex O: Supplementary Data Tables
Table 1a. Selected National Characteristics in I&S Sector

Parameter	PRODOC	2015	2016	2017	2018	Comments
National production of iron ore	375 million metrics ton in 2012	595.606.203 t ¹	559.508,816 t ¹	585.337.085 t ¹	data not available yet	
Export of iron ore	PRODOC points out that Brazil is the world's second largest exporter of iron ore	≅ 313.880.626 t ⁴	≅ 344.548.049 t ⁴	≅ 353.261.492 t ⁴	≅ 355.070.534 t ⁴	
Steel (crude) production (unit: 10 ³ t)	34,7 million of tons of crude steel in 2012	33.245,2 ²	30.212,3 ²	34.365 ²	34,735 ²	
Export of Steel products (unit: 10 ³ t)	-	13.725,8 ²	13.431,9 ²	15.352,0 ²	13.817,0 (estimated) ³	
Number of mills	27 plants controlled by 8 groups.	See comments				The steel industry in Brazil is represented by 14 private companies, controlled by 11 groups, operating 29 plants distributed by 10 Brazilian states (see map at the end of this document)

¹ According to DNPM - Departamento Nacional de Produção Mineral;

² According to IABr - Instituto Aço Brasil;

³ According to SINDIFER;

⁴ According to the export data available in the MDIC Comex Stat system. NCM used: 26011100 - Iron ores and concentrates, except roasted iron pyrites (cinzas de pirita), not agglomerated.

Table 1 b. Selected Characteristics in Minas Gerais State

Parameter	PRODOC	2015	2016	2017	2018	Comments
MG production of iron ore (MMT)	-	440.563.389 ¹	385.462.807 ¹	406.877.966 ¹	data not available yet	
MG Export of iron ore (MMT)	-	≅184.772.462 t ⁴	≅194.638.266 t ⁴	≅171.169.768 t ⁴	≅140.254.590 t ⁴	
MG Steel (crude) production (MMT)	Approximately 70% of all metals, including iron and steel	10.666,9 ²	10.895,0 ²	10,592 ²	10,594 ²	
MG Export of Steel Products (MMT)	-					
MG Number of mills (<i>pig iron</i>)	-	58 ³	29 ³	34 ³	41 ³	

% (<i>pig</i>) iron produced using charcoal	-	38,60% (4.702.950 t)	35,91% (4.336.160 t)	39,55% (4.825.607 t)	42,26% (5.347.510 t)	
---	---	----------------------	-------------------------	-------------------------	-------------------------	--

¹ According to DNPM - Departamento Nacional de Produção Mineral;

² According to the IABr - Instituto Aço Brasil;

³ According to SINDIFER;

⁴ According to the export data available in the MDIC Comex Stat system. NCM used: 26011100 - Iron ores and concentrates, except roasted iron pyrites (cinzas de pirita), not agglomerated.

Table 1 c. Charcoal and Production of “green” Pig Iron.

Parameter	PRODOC	2015	2016	2017	2018	Comments
Pig Iron produced	-	32.110.398 t ³	29.587.190 t ³	32.151.053 t ³	32.522.480 t ³	
% produced with coke	-	79,70% ³	80,7% ³	80,5% ³	79,8% ³	
% produced with charcoal (as a whole)	-	20,30% ³	19,3% ³	19,5% ³	20,2% ³	Pig iron production from charcoal
% produced with renewable charcoal	-	3,8 of 4,6 Million (t) (82,6%) ⁴ 6,9% ³	3,8 of 4,6 Million (t) (82,61%) ⁴ 7,3% ³	data not available yet ⁴ 7,6% ³	data not available yet ⁴ 7,5% ³	Considering “renewable charcoal” from planted forests (IBÁ).
% produced by non-renewable charcoal	At least 11,5% of production	0,8 Million (t) (17,39%) ⁴ 13,4% ³	0,7 Million (t) (15,22%) ⁴ 12,0% ³	Data not available yet ⁴ 11,9% ³	Data not available yet ⁴ 12,6% ³	Considering “non-renewable charcoal” from native forests (IBÁ).
Totals	-	32.110.398 t ³	29.587.190 t ³	32.151.053 t ³	32.522.480 t ³	

³ According to SINDIFER / Considering that charcoal production from integrated plants is from planted forests, the calculation was based on the numbers set out in the SINDIFER annual report for the year 2019 based on 2018.

⁴ According to Instituto Brasileiro de Árvores (IBÁ). However, the numbers provided in the IBÁ reports, have a margin of difference from those provided by SINDIFER. The latter only has the percentage of production of pig iron from coke and from charcoal from forests (not distinguishing between native and planted). IBÁ has not yet made available data for the years 2017 and 2018.

Table 2. Date and Periodicity of Project Institutional Meetings

Meeting Type	Calendar Year									
	2014	2015		2016		2017		2018		2019
Project Appraisal Committee (PAC) ¹	13/2/2014 ¹	-		-		-		-		-
Tripartite ²	-	-		NA		21/12/2017		NA		04/07/2019
Project Advisory Committee (CAPSIdSus)	-	-	NA	14/06/2016	21/12/2016	6/7/2017	12/12/2017	NA	29/8/2018	05/7/2019
Other (please specify)	Technical meeting UNDP-MMA: 17/03/2014				Grupo de Acompanhamento do Projeto no Governo de Minas Gerais: 22/06/2016	Grupo de Acompanhamento do Projeto no Governo de Minas Gerais: 22/02/2017	Reunião com Grupo de Apoio Técnico (setor privado) sobre MRV: 14/07/2017	Grupo de Acompanhamento do Projeto no Governo de Minas Gerais: 22/02/2018	RTA oversight mission: 24 a 28/09/2018	

¹ Comitê de Avaliação de Projetos. Meets once before PRODOC signing.

² PAC and tripartite are comprised of the same institutions (Brazilian Cooperation Agency, ABC, UNDP and implementing partner). Yet, they have different goals (project approval for signing by the Brazilian government and project monitoring, respectively), so are called differently.

Table 3. Institutional Partners participating in Charcoal Steel Project by Activity

Institution*	Year became Partner	Mechanism of Affiliation Mechanism (MOU, LOA etc.)	Relevant Output # (from PRODOC)	Brief Description of Contribution to the Project
AMIF (Formerly AMS/Silviminas)	2016	Informal agreement	1.1; 1.2; 1.3; 1.4; 3.4	Provide data on production activities, disseminate project activities/results, provide link with private sector and coordinate the sectorial technical support group that analyzed studies and participate in debates promoted by the project. The technical group was created in July, 2017, per request of the Ministry of Economy (formerly Ministry of Development) representatives in the project's steering committee. It is comprised of institutions related to charcoal and production and use: ABM, Abrafe, AMIF, Instituto Aço Brasil, Sindifer.
FAEMG	07/02/2017	MOU	2.2; 2.4; 3.4	Share information, studies and research on planted forests and on charcoal production; Disseminate the activities and studies of the Project; Mobilize small and medium charcoal producers to participate in awareness-raising and training activities; Attend to trainings activities on sustainable charcoal production offered by the Project; Support the creation of a knowledge dissemination.
FIEMG	07/02/2018	MOU	2.2; 2.4; 3.3; 3.4	Disseminate activities and studies from the Project; Mobilize small and medium charcoal producers to participate in awareness-raising and training activities on sustainable charcoal production; Attend, as multipliers for the FIEMG System, trainings activities on sustainable charcoal production offered by the Project; Support the creation of a knowledge dissemination network on sustainable charcoal production.
IMAFLORA	31/05/2017	MOU	3.3; 3.4	Sharing and dissemination of information, studies and research; Sharing and dissemination of information on traceability and sustainability promotion tools in the production of charcoal used to produce pig iron, steel and ferroalloys in Brazil; Creation of a knowledge dissemination network in sustainable charcoal production; Promotion of the conversion of traditional charcoal production to sustainable arrangements; Promotion of the use of sustainable charcoal in the Brazilian iron and steel industry; Construction of an institutional and normative framework favorable to the sustainable production of charcoal in Brazil; Monitoring of sustainability indicators in proposals approved by the support mechanism.

Institution*	Year became Partner	Mechanism of Affiliation Mechanism (MOU, LOA etc.)	Relevant Output # (from PRODOC)	Brief Description of Contribution to the Project
FUNARBE	05/07/2017	LOA	2.1; 2.2; 2.3; 2.4; 3.4	To strengthen the technology base and human capacity to the clean charcoal conversion in Brazil, through the administrative and financial management of the activities that will be carried out by UFV in the building and monitoring of demonstration units of charcoal production and validation of the forno-fornalha system.
UFLA	23/08/2017	MOU	2.2; 2.4; 3.4	Disseminate activities and studies of the Project; Support the Project in the generation of advanced knowledge on planted forests and sustainable production of charcoal; Contribute to the mobilization of small and medium charcoal producers to participate in awareness-raising and training activities on sustainable charcoal production; Contribute to the dissemination of information and to awareness campaigns; Support the future creation of a research and development network for sustainable charcoal production; Support the strengthening of market intelligence services on charcoal production and trade; Contribute, as disseminators and multipliers, in the trainings activities on sustainable charcoal production offered by the Project; Support the elaboration of training materials and of a training program on sustainable charcoal production directed at independent producers; Support the installation of charcoal production demonstration units.
UFV	09/10/2017	MOU	2.1; 2.2; 2.3; 2.4	Disseminate activities and studies of the Project; Support the Project in the generation of advanced knowledge on planted forests and sustainable production of charcoal; Mobilize small and medium charcoal producers to participate in awareness-raising and training activities on sustainable charcoal production; Set up information and awareness campaigns; Support the possible creation of a research and development network for sustainable charcoal production; Support the strengthening of market intelligence services on charcoal production and trade; Support the monitoring of the sustainable charcoal production technologies bidding mechanism; Contribute, as disseminators and multipliers, in the trainings activities on sustainable charcoal production offered by the Project; Elaborate training materials and of a training program on sustainable charcoal production directed at independent producers; Elaborate, monitor and execute projects for the installation of charcoal production demonstration units.

Institution*	Year became Partner	Mechanism of Affiliation Mechanism (MOU, LOA etc,)	Relevant Output # (from PRODOC)	Brief Description of Contribution to the Project
WWF	07/07/2017	MOU	3.3, 3.4	Sharing and dissemination of information, studies and research; Sharing and dissemination of information on traceability and sustainability promotion tools in the production of charcoal used to produce pig iron, steel and ferroalloys in Brazil; Creation of a knowledge dissemination network in sustainable charcoal production; Promotion of the conversion of traditional charcoal production to sustainable arrangements; Promotion of the use of sustainable charcoal in the Brazilian iron and steel industry; Construction of an institutional and normative framework favorable to the sustainable production of charcoal in Brazil; Monitoring of sustainability indicators in proposals approved by the mechanism to support sustainable charcoal production and use.

* Refers only to partners in private sector, academia, civil society. Governmental institutions are formally linked to the project via PRODOC (Ministry of Environment, Ministry of Science and Technology, Ministry of Economy, Minas Gerais Government) or formal invitation (Ministry of Agriculture and Embrapa Florestas).

Table 4a. Companies with Existing (and expected) Contracts under 1st Tender Mechanism Sub-component (in US\$)

Companies with Contract Signed	Date of Contract	Companies (Contract yet to be signed)	Type of Support (category)	GEF grant (US\$)	Counterpart *
Plantar	14/12/2017	n/a	1	559,006.21	1.663.551,68
Rima	15/02/2018	n/a	1	772,081.54	2.583.979,32
Vallourec	11/05/2018	n/a	4	314,465.40	2.015.503,87
ArcelorMittal	21/06/2018	n/a	2	209,769.26	749.354,00
ArcelorMittal	21/06/2018	n/a	3	299,670.36	4.713.016,79
PCE/Cossisa	30/07/2018	n/a	1	304,185.97	1.442.067,18
Rima	15/01/2019	n/a	3	254,647.31	1.283.259,25
Total				2,713,826.05	14.450.732,09

*US\$ 1,00 = R\$ 3,87 (July 2019)

Table 4b. Status of Existing Contract Disbursement under Performance Payments for 1st Tender Mechanism Sub-component (in US\$)

Companies	Date Contract Signed	Capital Cost payment (50 %)		PBP payment (50%)	Total Payment at Time of MTR (%)
		Implementation (10% or 20%)*	Operationalization (30%)		
Plantar	14/12/2017	06/02/2018	09/07/2018	3rd Q 2019-	50%
Rima (1)	15/02/2018	06/04/2018	26/06/2018	same-	50%
Vallourec	11/05/2018	07/08/2018	30/10/2018	same-	40%
ArcelorMittal (2)	21/06/2018	23/08/2018	12/12/2018	1st QTR 2020-	50%
ArcelorMittal (3)	21/06/2018	23/08/2018	-	same-	20%
PCE/Cossisa	30/07/2018	04/12/2018	-	same-	10%
Rima (3)	15/01/2019	03/05/2019	-	same-	10%

* As a contract guarantee, some companies (ArcelorMittal, PCE and Rima 3) opted for a retention of 10% of the total payment.

Table 5. Training Workshops supported at time of MTR

No	Date	Type of Event (e.g., workshop, seminar, meeting etc.)	Specified Target group (specific subnational governments, sector/subsector)	Number of participants		Percentage Female
				Total	Female	
1	20/07/2017	Capacity building (efficient charcoal production)	Charcoal producers	25 (estimated)	n/a	n/a
2	16 - 20/08/2017	Capacity building (sustainable charcoal production)	Multipliers and technicians from Senar/MG and Emater/MG	12	n/a	n/a
3	13 - 18/11/2017	Capacity building (kilns-furnace system construction)	Multipliers and technicians from Senar/MG and Emater/MG	12	n/a	n/a
4	17 - 20/12/2017	Capacity building (kilns-furnace system operation)	Multipliers and technicians from Senar/MG and Emater/MG	12	n/a	n/a
5	16/05/2018	Training (MRV methodology)	Companies from Support Mechanism	12	n/a	n/a
6	19/07/2018	Capacity building (kilns-furnace system)	Charcoal producers	40	n/a	n/a
7	22 - 27/07/2018	Capacity building (kilns-furnace system construction)	Multipliers and technicians from Senar/MG and Emater/MG	10	n/a	n/a
8	28/07 - 01/08/2019	Capacity building (kilns-furnace system operation)	Multipliers and technicians from Senar/MG and Emater/MG	10	n/a	n/a
9	01 - 03/08/2018	Capacity building (kilns-furnace system)	Charcoal producers	28	n/a	n/a
10	24 - 26/10/2018	Capacity building (kilns-furnace system)	Charcoal producers	46	n/a	n/a
11	06 - 08/11/2018	Capacity building (kilns-furnace system)	Charcoal producers	21	n/a	n/a
12	31/08/2018	Training (Carbon Balance)	Students, AMS (current AMIF), Faemg, Sebrae/MG, Rural producers, multipliers and technicians from Senar/MG and Emater/MG	23	n/a	n/a
13	28/09/2018	Training (Carbon Balance)	Students, MG State government (FEAM, Seapa), AMS (current AMIF), Faemg, Sebrae/MG, Rural	22	n/a	n/a

			producers, multipliers and technicians from Senar/MG and Emater/MG			
14	14/03/2019	Training (MRV platform)	Companies from Support Mechanism (Rima, Plantar, ArcelorMittal, Valourrec, PCE)	10	n/a	n/a
15	17/05/2019	Training (construction and operation of kilns-furnace technology to small and medium producers)	UFV, small producers, students	10	n/a	n/a
16	17/05/2019	Training (sustainable charcoal production and DN 227/2018)	Companies, AMIF, UFLa, UFSJ, Ministry of Economy, Sinobras, UFRA, rural producers,	19	n/a	n/a
17	17/05/2019	Training (Feasibility study and business plan from kilns-furnace system)	PNUD, MCTIC, UFV, Companies, FGV, Senar/MG, Faemg, rural producers	14	n/a	n/a
18	17/05/2019	Training (briquettes and fines charcoal production)	UFLa, UFES, Companies, rural producers	6	n/a	n/a
19	17/05/2019	Training (wood carbonization: charcoal for different uses and wood quality)	Companies, UFV, UFSJ, UFES, rural producers	13	n/a	n/a
20	17/05/2019	Training (By-products)	Companies, UFV, UFLA	8	n/a	n/a
21	17/05/2019	Training (Forestry techniques)	UFRN, UFLA, UFES, Companies, rural producers, Emater/MG, UFG	14	n/a	n/a
		Totals		367	n/a	n/a

Table 6. List of Public Awareness Media Prepared and Disseminated under the Charcoal Project

Nº	Type of document (e.g., public awareness, technical document, etc.)	Media	Title	Date Disseminated	Brief Description	Source
1	Training material	Manual	Produção sustentável de carvão vegetal: manual de construção sistemas fornos, fornalha (Sustainable charcoal production: kilns-furnace system operation manual)	15-16/05/2019 (trial printout)	Kilns-furnace system construction manual design to rural producers, entrepreneurs, multipliers among others, which contains information on how to build carbonization furnaces with burning of gases, increased gravimetric yield and without smoke emission.	Brasília: MMA, 2019 ISBN: 978-85-7738-433-4
2	Training material	Manual	Produção sustentável de carvão vegetal: manual de operação sistemas fornos, fornalha (Sustainable charcoal production: kilns-furnace system operation manual)	15-16/05/2019 (trial printout)	Kilns-furnace system operation manual design to rural producers, entrepreneurs, multipliers among others, which contains information on how to operate carbonization furnaces with burning of gases, increased gravimetric yield and without smoke emission.	Brasília: MMA, 2019 ISBN: 978-85-7738-433-4
3	Training material Awareness	Video	Vídeo de treinamento em produção sustentável de carvão vegetal com sistema fornos-fornalha (Sustainable charcoal production: kilns-furnace system construction and operation)	Finalizing	Kilns-furnace system construction and operation video design to rural producers, entrepreneurs, multipliers among others, which contains information on how to construct and operate carbonization furnaces with burning of gases, increased gravimetric yield and without smoke emission. In addition to the manuals.	
4	Awareness and technical document	Internet	SIDERURGIA SUSTENTÁVEL - Produção de carvão vegetal	October 9th, 2018	News exposure on sustainable charcoal production and project objectives/results.	https://pnudbrasil.exposure.co/19a49d454b80a1ec1d919a681fd00e82

Table 7. Estimation Risk at time of MTR

Description	Source	Propability / Impact (PIF/PPG)	Probability / Impact (MTR)	Comment (if change)
Government policies and programmes would not be continued and project results would not be mainstreamed.	PIF	2/4	2/4	There exists indications that CC may be on the agenda in MMA in particular in partnership with the private sector and the approach adopted in the Project may find a more favourable policy environment at least at the Federal level.
The private sector and technology institutions would fail to develop and implement clean and resource-efficient charcoal conversion technologies.	PIF	2/4	1/4	Three large integrated industries (Alceclor, Velloreco, RIMA) are currently participating in the project and an additional 2 companies Plantar and PCE
It would prove unfeasible to verify the GHG emission reductions delivered by advanced charcoal production facilities.	PPG	3/4 (NA)	3/4	- At time of PPG there was no MVR in place and nothing to verify. - The MRV is now in place, discussed with companies and is relatively simple to apply.
The unit cost of the renewable charcoal produced would be too high for commercial use.	PIF	3/3	3/3	Possible risk. Alternatively, if increased efficiency of project supported technology results in additional production of sustainable charcoal it is possible that unit costs may decrease.
Global climate change would have a negative effect on biomass production from forest plantations.	PIF	1/3	NA	Discernible effects of CC on remaining period of project are thought to be negligible
Conflicts of interests between sector stakeholders would hamper the implementation of the Project.	PPG	2/5	2/5NA	Does not appear to be a significant risk
Sector companies would not respond to the market triggers and incentives created through the bidding mechanism as expected	PPG	3/5	2/5	The response from sector companies at the time of the MTR was greater than expected and contributed to increased dialogue both between government and the private sector and among the companies themselves.
Adverse social impacts (such as labor loss) would affect the introduction of advanced charcoal production technology	PIF	2/3	NA	Focus of Project is promoting the testing of increasingly efficient technologies to produce more sustainable charcoal production with little social impact. Upscaling of one or more of these technologies may pose a risk post-project.
Exchange rate risk	PPG	3/3	3/3	Exchange rate risk remains with projections at time of MTR that US\$ may go down over LOP but for planning purposes project is using the following rate: 1 US\$ = 3.9 \$RS.
New Risks				
Lack of an enabling policy framework	NA	NA	4/5	It is unlikely that a policy framework will be put in place prior to project closure in MG threatening the sustainability of project outcomes.
Failure to replant existing forest plantations in MG	NA	NA	3/3	Failure to replant existing forest plantations would threaten charcoal supply in the event

Description	Source	Propability / Impact (PIF/PPG)	Probability / Impact (MTR)	Comment (if change)
				of increase demand forcing companies to turn to mineral coke and/or natural forests.

Annex P. Comparative Photos from MTR Site-visits
(before project) (after project)



Old fashion kiln - Hillside Kiln
("forno de encosta")



Improved Project Supported Kiln -
Kilns-Furnace System ("fornos-fornalha")



Large scale rectangular masonry brick kiln



Project Supported Metallic kiln
("forno-container")



Burner running on natural gas



Burner running on charcoal